ATHOMYTOMIA
OR A
DISSECTION
of the significative *Muscles* of the *AFFECTIONS* of the *MINDE.*

Being an Essay to a new Method of observing the most Important movings of the *Muscles* of the Head, as they are the neerest and Immediate Organs of the Volunrarie or Impetuous motions of the Mind.

With the Proposall of a new Nomenclature of the *Muscles.*

By *J. B.* Sirnamed the *Chirosopher.*

——*Augebitur Scientia.*

LONDON,

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THE EPISTLE DEDICATORY.

To his loving Father Mr Thomas Bulwer.

Sir,

IT hath been a laudable Cuſtome with Perſons of emi ent degree to deſcend to honour their Sonnes with directing Books unto them; he reciprocation of which affectionate Complement is a duty vell-becomming a Son; moved (therefore) with a certaine Filiall Decency I made choice to dedicate this Book unto you in regard he Argument of it is Provinciall o Phyſick, wherein your experince hath crowned your Profeſſi-

on, having ever been *Fortunatus in Praxi.* You ſhall find in it that which I uſe to call the Clock-work of the Head, or the Springs and inward Contrivance of Inſtruments of all our outward motions, which give motion and regulate the Dyall of the Affections, which Nature hath placed in the Face of Man; Being a New light, and the firſt Irradiation which ever appeared through the Diſſections of a Corporeall Phyloſophy. Could the Times have afforded it, it had come to your hands illuſtrated with the ornamentall Demonſtrations of many Figures prepared for it; but indeed the Stationers cautionary prudence met with an indiſpoſition in me; for I thought that in ſuch new and unexpected matters too great a ſplendor might poſſibly have dazled. I confeſſe I have met with little encouragement

ment in this Designe, for all the Physicians and Anatomists that I have hinted it unto have held it scarce fecible, Doctor *Wright* Junior onely excepted, with whom having interchangeably communicated Intellectuall Affaires, He shewing me the hint of his grand undertaking, which was *Anatomia Comparata*, that great Defect in Anatomy noted by my L. *Bacon* in his Book *De Augmentis Scientiarum*, in returne whereof I having first told him of an Atchievement of mine in this Art, which I called *Vox Corporis*, or the Moral Anatomy of the Body; I acquainted him also with this Essay, whose apprehension I found so well possessed with the gallantry (as he was pleased to speak) and the possibility thereof, that he promised me (to testifie his approbation,) he would commend it in

his firſt publique Lecture of Anatomy in the College; a day much expected by thoſe who had took notice of the moſt eminent and Divine Impulſions of his Anatomique Genius. But prevented by his much lamented Death, what entertainment this Eſſay ſhall meet with among the Sect of Corporeal Philoſophers; (having him ſo infortunately deprived of the advantage of ſuch a Recommendation,) muſt be left to the Fate of Books. However, I hope it ſhall find acceptance with you, and be received as an evidence of the proofe of that Education you beſtowed on me, and of my Duty.

Your obedient Son,

John Bulwer.

The Scope and use of the Essay for some prævious satisfaction to the Intelligent Readers.

More especially Physicians and Masters in Anatomie, whose Candor and Indulgencie on this Essay is most properly desired.

Having resolved to trace the Discoursing Actions of the Head to their Spring and Principle upon which their outward significations depends; when I had passed the superficial parts, and digged a little more than skin-deepe into the Minerall of Cephalicall Motion, I came to the Muscles, *the instruments of* voluntary motion; *or the instruments of those motions that are done by an earnest affection, that*

is, from an inward principle. The effects of whose moving significantly appeare in the parts moved, whereby an arbitrary motion we freely reject or embrace things understood (not with our minde onely, but with our mind and body both.) Here I made a ſtand; and began curiouſly to enquire and hunt after all the Anatomiſts both Ancient and Moderne that had writ of the Muſcles, *and the motions of the Head, as well to ſatisfie my ſelf as to crave in ayde of them: and having had a view of as many as I could heare of and conveniently procure, and obſerved their ſiverall veines and Methodicall variations no way anſwering my expectation; An emergent thought ſuggeſted to my imagination a notable Defect, hitherto undiſcerned in that Art which of late hath attained unto a great perfection, which caſt me into an exta-*

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sie of admiration at so strange a Preterition, that among the Conscript Fathers of Anatomy, there hath not been any one who, Datâ operâ, *had undertaken a generall Survey and Cognomination of the Muscles of the Body, as they are the necessary Instruments of all those motions of the Mind, which are apparently expressed and made manifest by the effect of their use and moving in all the parts of the Body, although more Emphatically, by those operations they have in the Head and the most remarkable parts thereof.* Galen *in that excellent Commentary* De motu Musculorum, *wherein he went beyond himselfe, and shewed the greatest miracle of his wit, a Book which all Anatomists kisse with reverence, as conteining the Oracles of Myologie, doth not so much as glance at it, but under the generall notion of vo-*

luntary and arbitrary motion; and in his Anatomicall Administrations wherein he abundantly prosecutes these motions, and glories to have found out many which were hid and unknown to the Physicians that were before his time, and where he teacheth a Method whereby every single motion may be found out; Nor in his Dissection of Muscles not a word, scarce, pointing to this Intention, not nawing many, but only numerically, not three with an imaginable reference to any Emphaticall mation of the Mind. And all the Nomenclators since his time, who have undertaken to play with new names, which for memory, brevity of Speech, and perspicuity of the thing, they have imposed upon the Muscles, have omitted the due regard proper to the Spirit and life of their mentall significations: whereas the Denomination had been

better

better from the Nature and energeticall property of the Muscle, which should by that Rule have been taken from the more extant and patheticall representations of those parts they actuate, and by which they exhibite their Organicall significations. More strange yet, that no Artists should have made this the Subject of their Orations, but should have all to this Day, either turned their discourse to the structure onely of the Humane Fabrique, the perfections or Symetry of the Body, or the excellency and antiquity of the Anatomique Art, or the Encomiums of the Antient and moderne Anatomists: whereas nothing could have set a greater glosse upon the Art, or have bin more glorious and honourable, than together with their Dissections, to have inriched their discourse with a relation of the Essence,

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Regiment, and proprieties of the Soule, whose well-strung instrument the Body was; Dr. Floud *being the first that in his peroration (when hee was Prælector of Anatomy in the College of Physicians in* London *Anno* 1620.) *exhibited such a kind of Method, together with an Explanation of his Reason, and an Example thereof; which Forme he did not magisterially propound unto them, but to declare that the Subject of an* Anatomicall præludium *ought to be the Internall & spirituall man, which is rather to be dissected with living words, than any knife how sharpe soever, and so consequently to be discovered and explaned by a style of discourse. The field of which subject as it is more ample and spacious than the rest; So the Studious in Anatomy shall never find it barren, but most fruitfull; So that every one herein*

may

may hit of much variety of invention. If then a Prologue onely of this nature is held so convenient by so great an Artist, how much more advantageous and delightfull would a discourse interwoven throughout the Dissection? Finding (therefore) that neither the great Parents of Physick, nor their Learned Off-spring had pathologized the Muscles, and thence bestowed significant names upon the most remarkable of them; I resolved to attempt the Designe, so to take away the blemish which hath fallen upon the Art by the slovenly and careless Denomination of some of them, and the six-footed Barbarismes of those Greeke Conjuring names which are fit only for the bombasticall Anatomy of Paracelsus; wherein I was encouraged by observing that half a dozen of Muscles named according to our

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new intended modell, or the Species of their most significant motion; and seeme to have been stumbled upon by the way of sport, or a Rhetoricall Chance-medley of wit; appeare so wonderfully pleasing to our moderne and most ingenious Anatomists, that they are still borrowing from one another those patheticall Apellations, or as Riolanus calls them, Elegantissima nomina, as if they were much affected with the felicity of that Pen from whence they first distilled, quæ omne tulit punctum, for Elegancy, Memory, Brevity, and Perspicuity. 'Tis true many have exercized their pens in discourses of the muscles: But an exact Description of the Discoursing motions of the Muscles none of the Great Professors of Anatomy have so much as thought on; whereas the facility, utility, and delightsomenesse of such notions might

have

have invited many; for, what is more easie than to discerne the parts manifest to Sense, and the fidelity of an Ocular assurance? that are so subject to our touch, that in the semblances of those motions wrought in the parts by the endeavour of the Muscles, we may not only see, but as it were feele and touch the very inward motions of the Mind; if you aske what delight will hence accrew to the understanding? What is so delightfull as to know by what kind of movings those varying motions and expressions of the Head and Face are performed? What Muscle doth accomplish this or that speaking motion? To observe the scheme or outward figure of each Affection in the Countenance? That is the situation of each in its motion, as it is drawn by the Muscles, and to read their significations couched in

their

their names? So that observing these accidents of the Head and Face, the Types and representations of the Affections which are accidents of the Mind, according to the nature of Correlatives, we may find out one by the other. And though it be but Negative ignorance not to be skill'd in such matters, and so may be thought a needlesse Nicety or over-curious Inquisition to know every Muscle of our Head and Face: Yet certainly it cannot but be some disparagement to one that pretends to any ingenuous Education or Reading, to be as a meere Puppet or Mathematicall motion, and not to understand why, or after what manner, the Muscles of his Head move in obedience to the Command of his Will; and so to have no better a Head-piece than that, which counterfeiting the naturall motions of Speech, uttered

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s mind to Thomas Aquine, *and*
e Learned Frier Bacon. *And who*
pray you that is well verſed in
hiloſophy, does affect to behold the
old effects of common Actions,
ithout a Diſcourſe of their Cauſes
nd intrinſicall Agents the Soule
nd the Muſcles? Since that is fa-
iliar to Senſe, and ſo by conſe-
uence to Beaſts, But this is ſubje-
ted to the Intellect, to wit, the In-
ernall Principle of man, where-
ore we will think it a thing worthy
o be corrected with the whip of Ig-
norance, if any raſhly plunge him-
ſelf into the Muſcular Sea of corpo-
al Anatomy, or of the outward man,
ithout any mention of the Inter-
all man, ſince the Soule only is the
ppifex of all the movings of the Muſ-
les, whoſe inviſible Acts are made
anifeſt by their operations in thoſe
arts into which they are inſerted.
Not that any perfection or exact

know-

knowledge of this nature can be ac-
quired; since the wisedome of the
Creator in the fearefull and won-
derfull structure of the Head is not
yet fully found out, although it hath
becne sought after by illustrious
men with much piety and Diligence:
and therefore that which is most
probable, and has the countenance
of Authority must passe for truth.
To those also that shall hereafter
Physically and Ethically handle the
Doctrine of humane Affections, this
may serve as a Mercurius Ethicus,
to give intelligence to all Athenian
Pathologists, of the motions of the
Muscles which beare the greatest
sway in matter of Affection: where-
as heretofore Pathology hath been
confined, as it were, to Aristotles
Muscle, to wit that principle of
inbred Heate, or ever movable sub-
stance of Spirit and blond, which
seemes to frame the severall images

of all the affections of the Mind; and has had little or no entercourse with the Muscles of the Affections; wherby she has been deprived of a great part of this ornament whereof shee is capable. But perchance the modernes have bin frighted with the difficulty of such a Designe, as supposing such a Muscular Philosophie *not fecible or reduceable into an Art: or else if it ever came into their Heades, they thought it a kind of impudence after* Galen *that glorious light of Anatomy, to endeavour any thing in this kind. Yet* Galen *in his Booke* de motu Musculorum *seemes to have given any one a faire occasion of daring, where he writes, Whereas wee have partly found out many things, and partly also intend diligently to make a thorow search after other things; and some other may find out what is wanting. With his*

leave

leave therefore, I ſhall endeavour by a light Eſſay, to take notice of the figure and ſignatures of thoſe Muſcles that belong unto the Head, and are the Authors of the ſpeaking motions thereof, and of the Superficiall parts comprized in it, by the way, raiſing Allegoricall inferences from them, and adapting and impoſing new names upon them according to their Phyſiognomicall ſignifications, which ſhall be as the Keyes of their important actions. Deſcribing the riſing and inſertion, together with the fibres which modify the Determinate actions of each Muſcle that I find inſtrumentall, adjutant, or any way concurring to the expedition of any remarkable geſture of the Head or Face: So ordering the matter, that occaſionally, moſt, if not all the myſteries of voluntary motion ſhall be brought in, at leaſt in ſuch a manner

ner, as shall be more than sufficient to lay a firme foundation to our virgin Philosophie of Gesture, and to serve my turne for the present occasion. And because none that hitherto have treated of the moving of the Muscles, have driven after this Scope of their significations; I shall name the Authors by whose light I walke, and upon whose Bowle I clap the Bias of the Affections, neither my Margin, nor the nature of an Essay admitting any more criticall formalities of quotation. I am not ignorant that such daring attempts and undertakings are very obnoxious to envy, and apt to fall under the Censure of Arrogancy and ostentation, imputations I have no reason to feare, since I arrogate not to my selfe by the conduct of my owne light, to have found any new or great thing to add to the Doctrine of Muscular motion, to which (to

speake

ſpeak the truth) I thinke there cannot much be added: neither am I ſo conceited of theſe animadverſions, as to hope they ſhould be admitted into the Schoole of Anatomy, & ſtraightwiſe be made Canonical; for, to fit a Novelty of this nature for ſuch an admiſſion, would require a whole College, or rather a nationall Synod of Anatomiſts to conſult about it; my ſingle Phantſie being not therfore par negotio, *I have adventurd far with little ſtrength and leſſe encouragement to recommend the Deſigne to men of ſtronger Braines and publique Spirits. I thinke I may with modeſty ſuppoſe, that I have ſprung a new veine, and ſay that I was enforced to dig my way through, and out of much Oare and Droſſe, to refine what was fit for my purpoſe, before I could come to ranſack this ſecret and undiſcover'd treaſury of the Muſcles; or to caſt the old metall*

l of their matter into a new
ld, to make it more il-
ſtrious by conjoyning it with
e inward motions of the mind,
hich ſet a repreſentative ſhape
d gloſſe upon the outward
tions of thoſe parts which
e moved by the Muſcles. If
ey are contented to allow me
have bin the firſt that by
t endeavoured to linke the
uſcles and the Affections to-
ther in a new Pathomyogamia;
at leſt to have publiſhed the
nes betweene Myologus *and*
athology, *that any Phyſio-*
gicall Handfaſter that can mar-
them ſtronger together, might
e it if he pleaſ'd: I aske no
ore: as for the reſt, Veniam
o laude peto. *And if the*
corbutick wits of this Age,
ho preferre an idle Head before
n active, ſhould bee loath to
af-

afford me that, I can eaſily comfo
my ſelfe with that of Cremutius
Tacitus, Suum Cuique poſteri
rependit, nec deerunt, ſi Dam
tio ingruit, qui mei memin
rint.

PATHOMYOTOMIA,
OR
A Dissection of the Muscles of the Affections.

Sect. I.
Of the Honour and Dignitie of Animal Motion.

MOtion, saith the Stagerite, is *Perfectio perfectibilis*, the perfection of that which is perfectible. 'Tis *ultima perfectio Creaturæ*, Saith the Pergamite; The highest perfection of Creature: for, a living creature, is a moving Creature by *moving*, and most commodious to him is *motion*, as that which is also out of his substance, because so soon as he is *Animal*, he is able to *move* of himself; and where there is Sense there is also *Motion*: for, the Sensitive plant that hath onely the sense of Tact, hath likewise some motion, to wit of Dilatation, & constriction; therfore *Aristotle*

ſpeaking of *Mola*, or a falſe Conception: But becauſe it is not a living Creature, it moves not. Hence when the Great Parent of Nature had come to *Animal motion* and its inſtruments, He ceaſed from his work, having nothing more honorable, as having accompliſhed the laſt end in the fabrick of the Body; which moſt Noble and neceſſarie and no way to be deſpiſed *motion*, eſpecially its chiefeſt and neereſt inſtruments, the *Muſcles* are in us ſo far and wide renowned, that if we could conceive in our mind all the *organs of motion* to be taken out, we would leave few parts to remain, and you would not acknowledge Man to be a living Creature; and that not only in regard he is depraved in his ſtructure, but becauſe he hath ſuſtained a greater loſs in being deprived of his *motion*: For were the abilities that proceed from *motion* and its inſtruments, ſeparated from the Body, without doubt man would almoſt ceaſe to be man, and would degenerate into a Plant or Stock whereupon you could no more obſerve thoſe *motions* of the *Muſcles* which are neceſſary to life, for he could neither follow

follow that which is wholſome, nor avoid what is noyſome. He would be left deſtitute of the grace of elocution, and his mind would be enforced to dwel in perpetual ſilence, as in a wooden extaſie or congelation; nay his Soul which is onely known by Action, being otherwiſe very obſcure, would utterly loſe the benefit of explaning it ſelf, by the innumerable almoſt *motions* of the Affections & paſſions which outwardly appear by the operation of the *Muſcles*. That, as (for Rhetorique) *Demoſthenes* aſcrib'd all to Action; So Phyſicians in Nature, give the preheminence to *Animal motion*, which is performed by the *action* of the *Muſcles*. Becauſe all the parts rejoyce in *Motion*, whereas they languiſh in *Reſt*; and as we know all by *Senſe*, ſo we do all by *Motion*.

Sect. II.

That a Muſcle is the proper and adequate Agent of the voluntary & pathetical motions of the mind, outwardly expreſſed in the Body.

THe neereſt and immediate *Inſtrument* to the *Motive Faculty* for the

exercise of *motion*, as that which can only receive the influence thereof, is a *Muſcle*; from whence *moving* proceeds, as from a *Motor*, whence among Phyſicians it is reciprocal and Convertible, to *move* and to *have Muſcles*: for, no part without the endeavour of a *Muſcle*, although it be illuſtrated with the preſence of a Nerve, is ſtirred up to any *voluntary motion*: neither ſhall you find any member of the Body that is *moveable*, which hath not ſome *Muſcle* ſet over it, as Preſident of its *ſignifications*: all the outward expreſſions we have or can make, are perform'd by *motion*, and therefore ſignifie the *affections* of the mind, which are *motions*; the *moving* of the inſtruments and parts, anſwering in a kind of ſemblance and repreſentative proportion, to the *motions* of the mind. And there is no *Muſcle* to be found in the Body, but it can expedite ſuch *voluntary motion*. Since all *voluntary actions* of the Soul are perform'd by *motion*, and all *motion* neceſſarily implyeth the uſe of *Muſcles*. *Galen* ſometimes calls theſe *motions*, *Animal*, to diſtinguiſh them from the *Natural*; for we can excite theſe *voluntary*

luntary motions when we pleaſe, uſe them often or ſeldome, heighten them or abate them, and leave them quite off; which is the Character *Galen* gives of a *voluntary motion.* 'Tis true, they who are preciſe in the definition of a *Muſcles* uſe, ſay, it is to be the *inſtrument* of *free or ſpontaneous motion*, and not *voluntarie*: becauſe Beaſts have Muſcles, unto whom *Will* is denyde, becauſe it preſuppoſeth Reaſon. *Will* being properly an *appetite according unto Reaſon. Fabricius ab Aqua Pend.* takes them for unskilfull men, who thinke when they reade of *Voluntarie motion*, that it is onely competent to men; whereas they by the *Will* meane not the *Appetite contracted*, but *generall* and at large, which we call the propertie of the very *Phancie* it ſelfe, and animall. This *Ariſtotle* every where calls ἑκούσιον, that is *Spontaneus*, of ones owne accord, and not done at unawars: whence if any will draw it narrower and call it *voluntarie* in men, and *Spontaneous* in other creatures, he will not be againſt it, upon this occaſion there occurrs another greeke word προαίρεσις which is rendred *propoſitum, ſtudium, inſtitutum,*

ſtitutum, *voluntas*; and this ſeemes almoſt to ſignifie the ſame thing which ὁρμὴ, *id eſt*, *animi appetitus*; but differs, that one is common to Beaſts, but *will* and *election* is onely proper to men, of which *impetuous motion* a *Muſcle* is the Organ. *Picbolhomenes* likes the generall definition, and allowes not of the vulgar reſtriction of *voluntarie motion*: the word *Spontaneous* according to *Nancelius*, being choſen to ſhew the *final cauſe*, & that the definition of a *Muſcle* may bee adequate and competent alſo to the Muſcles of Beaſts, in whom they are not moved according to *voluntarie election*; indeede, as *Archangelus* obſerves, Voluntarie motion in man, is both *Spontaneus* and *voluntarie*; by *Spontaneous* wee muſt underſtand the *intrinſique Principle* of the parts to be moved, which is *Cognition*, and ſuch *appetition* with Brutes is the *ſenſitive Cognition* and *appetite*; for theſe in man there is the *intelective cognition* and *appetite*, which is called the *will*. Yet as *Riolanus* well obſerves, all *voluntarie motion* is *Spontaneous*, but they are not *termini convertibiles*; for, all *Spontaneous motion* is not *voluntarie*. Indeede

Galen

Galen ſayes it boots not, whether you ſay ſuch *motions* are done by advice, or *freely*, or *voluntarily*. And although as to its principle, *voluntarie motion* is diſtinguiſhed from *animall*, as it depends upon the *command of Reaſon* : yet wee had no neede of that diſtinction, but that wee ſearch not onely by what inſtruments theſe motions are performed, but whence, and after what manner they are made. That therefore Phyſicians call an *animall or voluntarie motion* which is made by preceding knowledge, either of the *Intellect* or *imagination*, whereby the *motive facultie* is excited, that it may *move* the *members* after a divers manner, according to the diverſitie of the *appetite*. By all which and divers other places of *Galen* it appeares, that *voluntarie motion* appertains only to *Muſcles* as their office, and that for good reaſon *Muſcles* are appointed for the proper *inſtrument*, as being their common and proper action, motion proceeding from a Muſcle, as from both a *Principall* and *adequate Agent*; although *Averrhoes* (in this point croſſing *Galen*) by divers inſtances, which *Laurentius* hath ſufficiently

ciently anſwered, labours in vaine to prove that a *Muſcle* is not the *Organ of voluntary motion.*

Sect. III.

Of the nature and Conſtitution of a Muſcle.

AS he that is ignorant of *motion*, muſt neceſſarily be unacquainted with Nature, as the Genius of Nature inferrs: ſo if you know not the *moving* of a *Muſcle*, you ſhall bee altogether ignorant of its nature, which doth wholy conſiſt in moving; for, *moving* is a certaine action whereby the firſt habit of the *Muſcle* is changed: which *moving*, the operation of a *Muſcle*, is ſo proper to *Muſcles*, that *Fabricius* hence convinceth *Ariſtotle* of ignorance in *Muſcles*, that he is ſilent of them in his Hiſtorie of living creatures, where hee ſpeakes of their moving; which hee would never have beene, had hee beene skill'd in them. A *Muſcle* beeing not ordained to any uſe, but for the cauſe of certaine Action, from whence perchance of the Latines called *Muſculus a movendo*

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the movings of many *Muſcles* in leane and muſculous bodyes doe evidently appeare before the skin is taken off. And this *moving diſpoſition of the Muſcle* is much advanced by its proper temperament, being remarkably hot, for as *motion* begets *heate*, ſo *heate* is much requir'd to *motion*, which is performed with greater ſtrength and intenſion of the mind, than the acts of ſenſe. But the diſtinction of *Spigelius* is worth the noting, That, *motion* cannot ſcarce any way properly be ſaid the *action* of *Muſcle*; but rather a certaine *effect*, and the *uſe* of its *action*: for, the *motion* is of the *part* into which the *Muſcle* is inſerted. And the *Muſcles* are chiefely named from the *motion* of *members* which are performed by them, not that they are placed in thoſe parts, but that they are the Authors of the *motions* (and conſequently of the ſignifications) that appeare in thoſe parts. He muſt therefore be well read and exerciz'd in the nature of *Muſcles*, who would know of what Actions and Significations every one is the Inſtrument: He ſhould diligently in every *member*, out of the *Muſcles* raiſe

a consideration of the *motion* of the *members*: and againe out of the *motion* of the *Muscles*, the differences of *Muscles*, for they are Relatives. Motions are the motions of certaine *Muscles*, and *Muscles* are the *Muscles* of certaine *motions*. Whence so many *voluntary motions* as there are in the Body distinct in place and time, there are so many *Muscles* at least, defin'd by their termes and circumscriptions; but although for the most part one *Muscle* is assign'd to one *motion*, yet there is sometimes two where a stronger force is required, sometimes one onely *Muscle* to more *motions*. And that we might not alwaies stand in neede of so many *Muscles* as *motions*, no few of them performe *oblique motions*, and with the *opposite Muscle* of the same stock, *straight motions*. So that a *Muscle* is destinated to all *motions*. Hence as the word *motion* is generally tooke for the *Genus*, so *action* which is a *doing motion*, or a *factive motion* of the parts, is the *Species*, and the signification which *action* signifies is *speciall*, when wee say with *Aristotle*, That *action* is an *impression in the parts moved*, or with *Galen*, *Actions*

in

n fieri conſtituuntur, which *Factive moti-* *n* is beſt underſtood with *Avicens re-* *riction* to *animall actions* performed by he abilitie of the *Muſcles*; which *motive* *ctions* when they appeare in the parts noved, for the moſt part are *voluntary*, hough they may be alſo conſtrained, as ne may by violence make me bow my lead to the ſeeming ſignification of aſ- ent. And as the *moveable* parts vary, ſo he *actions* vary: Some parts are moved y themſelves, others by the intreve- ing of ſome other; and againe they ei- her change their place, or are ſtirred up n the ſame place. The *Muſcles* which ave their *principle* of *moving* from the oule, and actuate thoſe parts, are moved n the ſame place, and on their *movings* epend the *motion* of the *parts*, which is ot ſo much diſtinguiſhed by the diffe- nce of place, forward, backward, up- ard, downeward, to the right hand, to he left, or in orb, but alſo in the *figure* of he *part*, wch is called *Scheme*. For, *figure* s the *ſcituation* of a *part* in *motion*. Now nce every *inſtrument* ſhould be ſo diſ- os'd that it may moſt aptly attaine the nd unto which it was appointed, and

that

that a *Muscle* is the *instrument* of so many *voluntary expressions of the minde*. Let us see what neate & elegant composure it hath, to give an apt satisfaction to so noble & important motions. The similar parts which concurre to the construction of a *Muscle*, are seven in number, to wit, a *Veine*, *Arterie*, *Nerve*, *Flesh*, *Tendon*, *Membran*, & *Fat*; among which there is a part, without wch the *action* cannot be done, being that *part* from which *action* doth first arise, the *root* or *mansion* of the *faculty*, all the others subministring to this, concurre and conspire to the end of that one *action*: Therefore it is not sufficient to know that a *Muscle* is the *Organ of voluntarie motion*, but there is need of the acutest edge of wit, to finde out that part which exists as Prince and chiefe in it, and which is upon *commandment* of the *Soule*, *effective of motion*. This *prerogative of moving a Muscle*, is most justly given to the *Nerve*, as having the greater *aptnes* for *motion*; for all men very well know, that the part moves not, but the soule, for the *instruments move*, because they are *moved* by it: besides, the *instruments* that serve any faculty, must derive their

originall

orginall from that part from whence ſuch a faculty proceeds; Now the *Nerves* have their beginning from the *Braine*, and are afterwards diſperſed here and there and derived to other parts greater or leſſer, according to the diverſitie of the Action. But there ariſeth no ſmall doubt, becauſe *Galen* in many places calls the *Nerves* the *way* of the *vertue that depends upon the Braine*: whereupon many aſſuredly take the *Nerves* to be onely the *Poſts* & *Conveyors* & not *Motors*, & had rather call them Illatores, than Motores, which is farre from truth; for although they do bring the intelligence from the Braine to the Muſcles, yet withal they do move and worke; and they are the *Intelligencers* and *way of conveyance* untill they come unto the *moveable parts*: but when they are once entred into the *compoſition of the Muſcle* they become Agents and *Motors*. Which *Marinellus* by moſt cleare and pregnant inſtances out of *Galen*, maintaines and manifeſtly demonſtrates to be true. Now the *Braine* is the *Vniverſall organ* of *voluntarie motion*, the great myſterie whereof is thus ordered. The *Braine commandeth* as ſoone

as

as it hath *judged* whether the thing is be to be avoided or proſecuted, the *Nerves* commonly called *Illatores* or the Poſts, for the Intelligence they give, *bring the commandment*, and Facultie; the *Muſcle* illuſtrated with the Animall Spirits *obeyes*, and *moves* the part according to the command of the *will*: and as a *Rider* by the *moving* of his Raines, guides his Horſe; ſo the force of the Soule reſiding in the Braine, moves the *Muſcles* by the *Nerves*, as with Raines; for the *will* is like the Rider, the *Nerves* to Raines, and the *Muſcles* to the Horſe. So it is no *motion* untill it come to the *Muſcle*, for that is truly *motion*, which is done by the intenſion and remiſſion of the *Muſcles*.

Sect. IIII.

That the Appetite or Will is the firſt efficient cauſe, but not the chiefe cauſe of motion, the Spirit and Faculty being the more propinque and conjunct cauſe, and that beſides the commandment of the Will, the endeavor and intention of the mind is neceſſary thereunto.

SInce there are divers *motions* and Actions performed by the members, through

through mediation of the *Muſcles* who have their virtue, from a faculty, by which Phyſicians underſtand that which has a power of Doing or Working, who ſometimes call them *Powers* ſometimes *Virtues*; a Faculty by the definition of *Galen* being the cauſe of an *Action*, for every effecting *cauſe* is a Faculty. Now ſince every worke proceedes from ſome *action*, and it is neceſſary ſome cauſe ſhould alſo go before every *action*, it followes with reaſon, that as Action is the cauſe of every worke, ſo ſome faculty ſhould be the cauſe of that Action, for nothing is done without a cauſe, which is an *Axiome* in Phyſique; therefore it is altogether neceſſary to conſider the efficient Faculty of Action, and the Cauſe of work, for how can any thing be done without an Agent Cauſe? and that which has the power of working? Now this is the *animall faculty* which gives ſenſe and motion, which ſuggeſts cogitation, intellection & memory, and which tranſmits ſenſe and motion from the Braine, by the conduct of the *Nerves*, with the Greekes uſually cal'd λογιστικὸν that is *Rationatrix*, preſiding over

ver all the actions and motions that flow from our will, that is from Election and Councell, and that by the aide of the *Nerves* and operation of the *Muſcles*; of the Animall faculty the motive is a ſpecies. *Albertus* where he ſpeakes of the *Exteriour motive virtue* which followes upon the *affective*, that is upon that which workes the inward motion of the mind, very appoſitly to our purpoſe, diſtinguiſheth the *motive faculty* into the *appetitive*, the *affective*, and the *motive*, the firſt commands the part to be moved, the *affective* and *motive* perform the motion of the members, but the affective makes the inward ſpirituall motion, the motive makes the exteriour corporall motion of the members which repreſents the inward motion. But the actions that are done by the moſt manifeſt *tone* of the *Muſcles*, are thoſe which are produced by that *ſpecies of motion* which they call *Pathetique*; for, that cauſeth more violent, extant, and remarkable actions in all the parts of the body; the internall motion of this Faculty or Perturbation *Averrhoes* calles *motum electivum*; and there is no creature

that

hat at ſome time or other is not dro-
ven to ſome impetuous action by this
nward agitation or perturbation of his
mind; which actions in reſpect of their
ffect are *morall*, of their ſuppoſed *Spring*,
itall, yet the actions of theſe *vitall Ethi-*
ues ſerve the *Animall* by divers motions
of perturbations, which ſpring from
he *Patbetique Energetique* or *Ethique fa-*
ulty, which although of it ſelfe it be
oyde of reaſon, yet being apt to obey,
ence there ariſeth ſome conflicts be-
weene the *Rationall* and *Irrationall* part
s the *Practique Intellect* hath theſe af-
ections in Subjection, called *paſſionall*
when they are mov'd by the arbitri-
ent of another, which though they be
eckon'd among paſſions, yet in their
ffects they are actions, and appeare ſo
o be in their types and externall repre-
entations in the face and countenance,
nd other parts of the body. b The *prin-*
ple of all motion is the *Apperite*,
hence the ſenſe offering what is deſi-
ed, the motions are done no other-
iſe then as you ſee in Machins; the
ullyes, loos'd, one thruſting foreward
he other, but in Machins without

the

the mutation of qualityes, but in us the formall cauſe of motive heate and ſpirits is tranſmitted withall to the parts hence in anger we wax hot, in feare and ſadneſſe cold, for, all theſe perturbations are done with heate and cold, t wit, the thing ſeen excites the *Appetit* and this the Affection, which prepare the inſtrument of the Action. So th the *Appetive power or will* commandet but moveth not, but after his *nod* th *Motive faculty* ariſeth, which flowing b the *Nerves* produceth *Motion*. Yet *Fo notice* his diſtinction is to be conſidere In this buſineſſe, who will have the *A petite* or *will* to be the firſt Efficient cau of motion, but not the Chiefe cauſ which belongs rather to the *Spirit* an *Faculty* than to the *Appetite*, and muſt b returned thither, & beſides the *Appeti* or *will* we muſt find out ſome more pr pinque and conjuſt cauſe of motion: mong others the chiefe reaſon is, th when the Palſie hath ſeaſed on any pa becauſe then the *Nerves* are deſtitute the Spirits and Faculty, the moſt effic clous or ſtrongeſt Appetite or Will ca not procure a motion, and if you bin

Nerve hard with a cord you may command what you will, but there followes no obedience of the *Muſcle* whoſe *Nerve* is ſo ſtopt, ſince all notice or intelligence of our will is thereby intercepted from arriveing at the *Muſcle*. Besides, this commandment of the Will ſeemes of little efficacy at all, unleſſe a certaine endeavour and intention of the mind be added unto it as a *Coadjutor* or companion; for if a man would either wreſt his eyes divers wayes, or ſet all his parts together into ſpeaking motions, ſhal he forthwith effect it, although the inſtruments be ſound and fit for action; of which this in ſooth is the only cauſe, that the mind muſt *bee agere*, and cannot take notice of all things at one inſtant, nor be intent to every ſingle motion. Therefore the Will is not only ſufficient, but a certaine intention alſo of the Mind is neceſſary, to rowze up the Motive faculty, otherwiſe a ſleepe and languiſhing in particulars. Wherefore this *Animall Faculty* which by the rectorſhip of the ſpirit flowes from the Braines into every particle, while it is driven foreward by the command of

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the will and the endeavour and intenti
on of the mind, effects the *actions* whic
so significantly appeare in the *Head* an
other parts of the Body.

Sect. V.

That it is strange, but not so wonderful that Animall motion should be performed on such a sudden.

DIverse things are required that th
parts should be moved by an *An*
mall or voluntary motion. For wee mu
know, how all that is *moved*, is compa
of a *Mover* and a *Moveable*, Since what
soever is *moved*, is moved of some thing
when therefore we are *moved*, it is nece
sary there should be a compound of
moving and a *moveable*; the *Soule* is t
Movens metaphoricum, the *moved*
moveable the *Body*, or some part of it; f
it is the *Soule* whereby we live and ha
motion. And because the *Soule moves* n
by a naturall propension, but by know
ledge and for an end; it would be con
sidered with the sharpenesse of wit,
whom it is *moved*, and with what *instr*
ments and *medium's* it *moves* the *He*
an

nd *parts* of it, and which are the *in-ruments moved*, and the *moving Mediums* etween the *Soule*, and the laſt thing *mo-ed*. The *Principall* of *locall motion* (eſpe-ially which muſt be immoveable) is the oule, *Appetition* is the *Medium* that *moves* he *Moveable*, the *Inſtrument* is the *Spirit*. o that there are ſixe things concurring o theſe *Actions*. *Immoveable* as the *Soule*, *mmoveable partly*, and *partly moveable*, as he *Braine*, *quatenus* a *Principle*; which ove, and are *moved*, as the *Head*, which *moved* by the *Braine*, and *moves* the arts of the *Face* with it; which are *mo-ed alone*, as the *parts* of the *Face*; the edium of the *motion*, as the *Appetition*, nd *Affection*, and the *Inſtrument*, which the *Spirit*; To this effect *Cardan*, or you will have it as *Fabricius ab Aqua end.* has d awn it out of *Galen*, and *Ari-otle*: All that appertains and concurs o *locall motion* is thus univerſally or-ered. As ſoon as the *imagination* is for-ed of the *object* known by the *intellect* r *ſenſe*, whether it be to be proſecuted r avoided, ſtraightwaies the *Appetite* is oved, which forthwith excites and oves withall the *paſſions* of the Body,

either

either by heating or refrigerating, eith
to attain or avoid: The paſſions, that
heat, cold, do aptly prepare the *moto*
Inſtruments, as *Ariſtotle* ſpeakes inge
ouſly; Which are according to *Galen*,
Braine, the *Nerves*, the *Muſcles*, a
Joints. The *Braine* beſides its propo
worke done by it ſelf, and as it were,
red up by ploughing, and brought for
out of its proper ſubſtance, as the Im
gination, Appetite, and Paſſions, do
moreover tranſmit the Animal Spi
begotten in and of it ſelf, by the *nerv*
his branches, as it were by channels
the *muſcles*, the peculiar allyed and pr
per organ of *motion*; with which for
the *Muſcles* wholly affected and *illuſtr*
ted attempt the performance of *appar*
motion. Now, although the *Muſcles*
the *inſtruments* of *voluntary motion*,
many other things being required to
act of their *motion*; whence that by the
mediation (ſo many cauſes intereceding
ſo ſuddenly a commotion ſhould
wrought and introduced into the Me
bers, is a thing full of miracle! *Zing*
hath a pretty Simile to illuſtrate this
ſineſs: As (ſaith he) in the ſtriking of

ſtri

ring of an Inſtrument, an eight answers unto an eight: So the *Motive Faculty* by a wonderfull providence of Nature moves the *mobile Spirits*, and theſe moved, flie forth with a ſtupendious obedience to their deſtinated Organs. As in a *Monochord*, a *Diapaſon*, a *Diapente*, and a *Diateſſeron* ſound only at certaine *intervals*, and in the other stops ſound not: So certaine parts, as ſoone as may be, obey the ſoule, ſending particular Mandates unto them; for, all the parts wait upon the ſoule, and were framed by Nature to ſuch an aptitude, that being commanded, they preſently obey, and are moved as long as the *moving faculty* flowing from a *principle*, is not by ſome impediment debarred from them. But without doubt, ſaith *Marcellus*, this is not very perſpicuous to reaſon, how we do move at the *Nod of the Will*, what part ſoever we deſire, although the moſt remoteſt from the *head*, the *foundation* of the *moving faculty*, and that without any interpoſition of time; But all admiration and aſtoniſhment will vaniſh away, if we ſuppoſe that which is moſt certaine, to wit, that the

motive

motive faculty while man is awake, or no
oppreſſed with heavy ſleep, doth perpe
tually flow and travell to the *Nerve*
which are derived from the *Braine*, an
diſperſed through the Laberinth of th
Body; which virtue ſince it is, as w
may ſo ſay, in the *firſt act* in the Toe o
the Foot, the *Appetite* commanding, i
breaks out into the *laſt act* which is *moti*
on. *Ca'en* gives us an example: no time
ſaith he, it found to paſs between, whe
you would move your Head, and be
tween the Action it ſelf: As it alſo hap
pens in the Senſe; for in this we expe
no time of wounding to feele, but th
Knife at once cuts, and we feele it. An
this calls in queſtion that opinion o
the whole Schoole of *Barbarians*, whic
affirms the *Spirits* to be *tranſmitted* to a
the Members, and by them the *virtue*
carried & conveyed, they being the pro
per inſtrument of the Soule: But if th
virtue is communicated by *tranſmiſſi*
of the *Spirits* they would no way con
municate on a ſudden, but in manife
time; for the Spirit is Corporeall: Bu
we ſo ſuddenly as we will move ou
Head or the parts of it, expecting no
thin

thing at all the *virtue* to have an *influence* upon the *motion*. For, Nature, as *Vallesius* well observes, never orders any thing to have a power, only to move once: but she once gives that which shall have a power to move many times. And therefore when we attempt any second motion, we have the benefit of that influence which had first inabled the *motory parts*.

Sect. VI.

That in all outward Actions the Soule commandeth either manifestly, or obscurely, and that we are not stirred up to any such motion by Nature, or Custome.

IT is very hard and difficult to assign a Cause of so different motions. *Galen* who was very curious and inquisitive in searching out the cause of the moving of Muscles, at last ingeniously confesseth, that he knew not how the Muscles were moved: the cause of his doubt was, that since the offices of Muscles were unknown to Infants, they seemed not apt to demand their endeavour of them, because it is a *voluntary motion*; *Will* is from

Knowledge; the *end* therefore for which we are *moved*, and the peculiar *Inſtrument* of the motion is to be known: therefore ſince none of theſe are known to Infants, for good reaſon we aske why they rather move their lips than their *feet*, or how they move them? In all *motions* that are *voluntarily* performed, there is nothing more obſcure or doubtfull than this; becauſe I ſee, ſaith he, in children much more in others, that when they would make any outward expreſſion with any Member of their body, this they do *voluntarily*, and this they do by a *Muſcle* deſtinated and appropriated to that motion, although indeed they know not that *Muſcle*, and not only are they ignorant of this, but even many Phyſicians; and the conſideration of this myſtery drives him to acknowledg ſome extraordinary hand of Providence to be active in it; for his words are; Becauſe I find the Members of the body to be moved by a *Muſcle* on which the Creator, who created and faſhioned us, and is alwaies preſent with us, hath prudently beſtowed a power of moving: when therefore we would make uſe of

an

any motion, He moves the *Muſcle* which he hath formed and created for that purpoſe. *Scaliger*, who takes this confeſſion of *Galen* for a qualme of Philoſophicall modeſty, tells *Cardan*, verily *Galen* knew not many things, which yet he would not have others to know that he knew them not, and with a ſubtile facility he attempts to reſolve this knotty doubt. *Will*, ſaies he, is twofold, one of *Election*, as in wiſe men: another from *Inſtinct*, as in an Infant new-born, to ſuck milke, for when he is grown of age, he will do the ſame (if need be) with *Election*, and the force is the ſame which ſerves the Soule for the commodity of the Body, and hath a connative Species of its conſervation: The *Soule* therefore moves the *Muſcles*, and therefore moves them. *Axiom* thinks the Oeconomy of our Body to be as 'twere a City govern'd by good Laws, wherein when once the order is eſtabliſhed, there is no need of a ſecret Guide which muſt be preſent at every thing that is done: So all parts of the Body to what uſes they were appointed performe their duties without any *Teacher*, and as *Homer*

feigned that the Inſtruments of *Vulcan* moved of their own accord, and thoſe golden Shields to be of ſuch cunning workmanſhip that they moved of themſelves: So the *Muſcles* endued with a convenient ſtructure, performe their worke by a certaine ingenit virtue. But *Marinellus*, a Phyſician of an excellent judgement, conceives not *Scaligers* diſtinction of the *Will* to be conſonant to reaſon; for *Will* alwaies as it is a *Will*, ſuppoſeth ſome *Election*, and *Election*, *Cogitation* which leaſt of all exiſts in Infants: And therefore to feigne a *Will*, to *Will* ſomething *unknown*, ſeemes to him a vain forgery. Nor is he ſatisfied in the example of *Ariſtotle*, which is not well accommodated to the buſineſs of *voluntary motion*. For, a Monarch impoſeth Law upon his Citizens who are renowned with a knowing ſoule, and keep the Princes commandement in memory. But the *Muſcles* the *moving* and the *moovable Corporeall parts* are not endued with any Cognoſcent powers; for ſo every animated part were to have a proper Soule, which were moſt abſurd and repuguant to his own ſaying, when

he infers, that it behoves not there ſhould be a Soule in every part, but that it exſiſt in ſome *Principle* or chief part of the Body. Beſides, the parts for the performing of *motion* ſtand in need of a *Spirit* or influent heat that makes the motion, according to its nature, impetuous, or ſome moving Faculty that flows from a principle, but this or that is not moved but by *Imagination*, or *Appetite*, the *Imagination* or *Appetite* not without the *Soule*; whence it is to be concluded, that the *Soule* alwaies *commands* the *motion*, and the parts moveable do not performe their worke from Nature. The Philoſopher makes it plaine, that motion is done by the Imagination and Appetite; for, the *paſſions* aptly obey the *inſtrumentarian parts*, the *Appetite* the *Paſſions*, and the *Imagination* the *Appetite*; and if in that place he uſeth the word *Nature* for the *Soule*, as ſome Commentators affirme, (for the Soule is a certaine Nature) yet that ſimilitude were incongruous enough and unlike, for, the Soule ſhould be alwaies preſent and command the parts, and ſhould not move by ſome *inſtrument*, which the Philoſopher

denies. Perchance ſome may object, that ſometimes we know not nor are awar of ſome actions we doe, and therfore they can not be *voluntary* nor have any ſuch emphaticall ſignification; this indeede is a thing ſomewhat doubtfull and full of ambiguity in ſome mens opinions, and has bin the cauſe to make ſome to imagine that there are many kind of *motions* that depend not upon our *will*. But they who have taken this doubt into conſideration, have decreed the *will* to be *double*, one is [illegible], the other is [illegible], the firſt is, *vigilantium*, proper to them that are awake and heed what they doe; the laſt is *Dormientium*, or theirs who doe a thing in their ſleep, or with leſſe intention of the mind. So that in every *motion* the *wil* cõmandeth either manifeſtly or obſcurely. Hence it is that we doe not alwayes mind the motion of every particle in our head or face, yet all the geſtures of the parts which we exerciſe, even when wee know not whether we uſe them or not, are motions of the ſoule, ſince performed by the worke of the *Muſcles*. And I thinke, ſaith *Marinellus*, there is

no

no man when he moves after any manner his *whole head*, diſtorts his *Face*, *Eyebrow*, *lip*, or *noſe*, or winkes with one eye, which ſomtimes we do not being aware of them, and ſo againſt our knowledge and will, yet none are ſo ſimple to thinke they are not the actions of the *ſoule*, and done by *voluntary motion*, and that they proceed not from the ſoule, becauſe *knowledge* and *command* doe not ſo formally precede as in other actions it is wont before *appetite*; for the Phanſie may doe its worke and move when we perceive it not; and it appeares by *Ariſtotle*, that motion may be commanded the members although the outward Senſes are notably hindred; and whatſoever motion is done by the commandement of a Faculty, is voluntary, it being without all controverſy, that all motions the *ſoule* exerciſeth by the *Muſcles* are *arbitrary* and ſo to bee called, they being *voluntary* which *Reaſon* and the *Will* command, called Animall, becauſe common to us with Beaſts; For, all motion that the Rationall or Irrationall Faculty commands the *Muſcles*, is animall, or *arbitrary*; for ſince all

motion is either *naturall* or *voluntary*, and that which is done by the *Muſcles* is not *naturall*: it followes then it muſt be accounted for *animal*, *arbitrary*, or *voluntary*, names which imply all one thing. But all *motion* which is done by the *contraction* of the *Muſcles* to their heads is commanded the *Muſcles* by the *Soul* or *Appetite*, al ſuch motion therfore is and ought to be called *voluntary* or *animall*, for, that *contraction* of the *Muſcles* which without the helpe of any extraneous thing are driven to their Heads, & move the members into which they are inſerted, is the operation of an animated body *quatenus* animated, wherefore ſuch *motions* of the *Muſcles* cannot bee done by any other thing, the Soul not cooperating with it: For, al actions equally proceed from the Soul, but receive their *Specifique* difference from the *inſtruments*; Wherefore theſe are both *animall* and *voluntary motions* if the name be put for them both, but if you would call that onely *voluntary*, which is done with our *will* and *aſſent*, and not againſt our wills, you will be compelled to exclude many other motions performed by the *Muſcles* from the number

number of *voluntary motions*. *Galen* endeavours to ſalve this doubt; why wee doe theſe *voluntary actions* as 'twere not wittingly or willingly, or as being aware of them, not preſuming to have found the cauſe, but to ſpeake a little more probably: Becauſe, ſaith he, wee are not *intent* with our whole mind upon them, as many have done actions which they forget to have done in fits of anger and paſſion, having made but a ſlight and ſuperficiall impreſſion in their mindes, as madmen performe many voluntary actions which yet they remember not when they come to themſelves; whereas to ſome actions we adhibit a more indulgent heed, when no way diſturbed nor diſtracted with cares, we are not drawn away to deſiſt from the motion begun; for, Care, the Contemplation of ſome thing, Cuſtome, or ſome affection of the mind, may prove impediments to the knowledge of the Command of the will; for if our Cogitation be very intent upon a thing, ſo that it ſlights other things which had intended it, it errs from its proper end, which often happens to men when they

intend a journey to a certaine place, and many times being engaged in other thoughts, doe paſſe it: Notwithſtanding it is a thing hard enough to believe, that any one ſhould command and not know that he doth command, and therfore ſome have dared to affirme, that the beginning of a motion depends upon the command of the will; but the progreſſe of a journey to bee done by Cuſtome and Aptitude of parts, ſince many at that time are turmoyl'd with divers cares: but it is better to affirme the Cauſe of ſuch errour to be by reaſon of the mind detained by ſome cogitation. And with *Marinellus* wee may wonder as much, how ſuch motions are many times done in our ſleep, which we forget to have done in our ſleep, the ſoule then working obſcurely; for when we awake, wee cannot tell whether wee had moved any part of our face or no, and ſo by oblivion are ſoone induced to ſay, they were done without our will or privity, which is the caſe of your *Noctambuli* (or as *Sennertus* had rather call them, *Somnambuli*,) who in their ſleepes riſe out of their Beds, walk

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and performe many actions and geſtures whereof there is mention every where among Phyſicians, which geſtures and actions are done unwittingly, and when they awake in the morning they remember no ſuch matter, animall motion being ſtirred up in them by force of a ſtronger imagination, which are performed by the benefit of the motions of the Hand feete and the other organs ſerving to animall motion, commanded by the *Locomotive* prickt forward by the *Appetite*, ſtirred up by the *Phanſie*, which taking notice of ſome object offered unto it in *ſleepe*, *tenders it* to the *Appetite* either to bee avoyed or embraced. To which the *command of Reaſon* and the *will* doe concurre with the *locomotive power*, although more obſcurely and darkely, the action of *imagination* being ſtronger in *ſleepe*, but that of *rationation*, which ſhould direct and moderate the *Phanſie* is more obtenebrated, the actions of thoſe who *ſleepe*, and thoſe who *dreame* ſeeming not to differ, but that theſe riſe, the others lying in their beds doing the ſame things. Another obiection may bee, that many of theſe

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speaking motions of our Head, Face, & other parts of our body are many times done by *custome* & a *habit*, rather than by a *voluntary motion*. Indeede, *Zinguer* reckons *custome* among the accidents of the Instrumentall cause of the motive faculty, and that it is as 'twere the *Vicar of the will* and sometimes the *Arbiter*. But the Master of the subtilties laughs at *Cardan* for his definition of the double Cause of *motion*, one the *Soule* & the *Muscles*, the other *custome*. You in vaine saith he, multiply things, you in vaine bring a name for a thing: For, what is custome? if I should aske, you would spend above two dayes in deliberation what you were to say, & it would fall out well if you could then come off with credit. *Custome* is nothing else but a *habit*, but a *habit* is not the *cause of motion*, but a *quality* added to the *motion*: because it so adheres to the members, that as *Aquilio* without *C.* of his owne accord doth presently answer, brings forth its actions as they are to be done without any inquisition. *Custome* indeed, and the aptitude of parts doe advance & helpe forward the doing or perfecting of some motions; and it is worth our admiration, to see in a *Chironomer*

who has his ſcule in his Fingers, the *Muſcles* of his Hand ſhould bee directed ſo ſwiftly to the *Nerves* of his inſtrument, while it may bee he is afflicted in mind, his hand being droven by the command of his *will* to ſuch motions, all the ready variations of his cunning fingers being done by the Nods of the Soule, though unknown unto him; unknown, by reaſon of long *cuſtome*, by which ſuch actions become moſt eaſy. The modeſty of *Galen* will conclude this matter very well. Raſhly to judge theſe motions is ignorance, promptly to pronounce them not *voluntary* is raſhneſſe, and there is no juſt cauſe why wee ſhould recede from what is evident, and there are evident judgements to be made of *voluntary motion*; the cauſes we find not, becauſe we follow not particular actions. He that denyes his beliefe is voyd of ſenſe. He is raſh that pronounceth of uncertainties. He that for the obſcurity that is in theſe, ha's thoſe in ſuſpicion which are cleere, is a Sceptique & of them that delight in Doubts. He that not only ſuſpects but ſtudyes to evert thoſe which are cleere, for the obſcurity that is in them, is an arrant foole.

Patho-

PATHOMYOTOMIA

OR A

Dissection of the Muscles of the Affections.

Beeing an Essay to a new way of describing the operative and significative *Muscles* of those Affections, which are more Conspicuously emphaticall in the Demonstrative Actions of the Head and Face.

THE PROEM.

The Prerogative of the Head in point of Animal and ſignificant motion.

MAn who in reſpect of the variety and excellency of his Actions is a moſt perfect Creature, has a Body withall compoſed of divers parts, anſwerable to the variety of his Actions; and every way fitted to ſignifie and explane the *affections* of his Mind; among which, the moſt eminent and obvious part, the *Head*, wherein the whole man ſeemes to dwell, hath a prerogative in point of ſignificant motion, and being the *Forum* of the *Affections*, hath many advantages for declarative Action of the ſubordinate and more private parts of the Body. And all this by a good right, as being the Root of the Affections, and the *principle of motion*. Hence the inſtruments of *voluntary* motion, the Muſcles, diſpo-

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ſed in the Head and Face, are ſo honorable and remarkable, that if man were deprived of them, he would look like a *Socraticall Statue*; for, his *Face* would be alwaies in one fix'd poſture, there might be *Facies* but no *Vultus*, or voluntary explanation of his mind: But it would be like a Cabinet lokct up, whoſe key was loſt. No certaine way of entrance into his mind to be found, and ſo *Momus* his Cavill would be juſt; all the inward motions and affections of his mind would be obſcur'd in ſilence, and become altogether inviſible, the *countenance*, without the *moving virtue* of the *Muſcles*, ordained in time to meaſure out the paſſions and affections of the mind, remaining like a watch, whoſe ſpring or Principle, and the wheeles that ſerved for motion, were taken out.

Memb. I

Memb. I.

Of the Muſcles, the inſtruments of voluntary motion whereby the generall ſignifications of the Head are performed.

ALthough the Braine it ſelf is not moved by a proper Animal motion, and ſo needs no Muſcle: Yet the reſt of the *Head* requires divers motions, both in reſpect of the *whole*, as in reſpect of certaine *parts*, or Members, which as well as their *chief* are ſo called, for that they have no proper circumſcription on every ſide, nor are every way conjoyned to others; more eſpecially, that the *whole Head* with its compriſed parts, by the benefit of certain *Muſcles* might be enabled to move, and by *motion*, to expreſſe the affections of the mind. Now the *Head* being (as all Bodies are) in a place, its *motions* with other corporall motions muſt be locall; therefore the *Head*, by the *Iſthmos* of the *Neck*, as it were ſticking to the *continent* of the Body, as to a *Baſe* or *Centre*, is apparently moved by many affections and energeticall motions of the mind; being oftentimes moved

moved in a place, from a place, to a place, & by a place; but obſerving ſtill the ſame *centre*, to wit the reſt of the Body, which perſiſts unmoved, as likewiſe doe all the parts of the *Head* and *Face*, when their potentiall abilityes of ſignification are reduced into act, by any affection or pathetical motion of the mind. But as *members*, ſo ſome *actions* are *compounded*, and ſome *ſimple*; the *compound* ſoone appeare; the *ſimple* do laſt occur; for firſt we perceive *Nods* the *compound* motion of the Head, then the more *ſimple* motions, to wit the *contractions* and *extenſions* of the *Muſcles* where of thoſe *Nods* conſiſt, and which are the ſingularparts that effect, or aſſiſt the declarative motions of the *head*. Some of which inſtruments & their motions, in leane & muſculous men do evidently appeare without any diſſection even through the veile of the skin. Theſe *Muſcles* the inſtruments of *voluntary motion*, by which the *generall* diſcourſes of the *Head* are performed, are uſually reckon'd *ſeaven paire*; whereof every one hath its Action, ſome being placed *before*, and ſome Diametrically oppoſite *behind*, and of the *Muſcles* of every pair

on

one takes up the right ſide, another the left. Thoſe *Muſcles* are *primary* and ſerve the proper motions of the Head, which are done, the Head mov'd, the Neck unmov'd. *Archangelus* calls theſe that attend upon the *private motions* of the *Head*, *Muſculos Cephalicos*, *capitall* or moving the head. And, the Cylinder of the Neck although a medium betweene the Head and breſt yet moſt properly refer'd to the head in reſpect of the common motions. The *Muſcles* that are ſet over the conduct of the *Neck* accompliſh the *common* motions of the Head, which are thoſe which follow the motion of the *Neck*, which motions are *ſecundary* and by accident, for, the *Neck* being moved, the *Head* neceſſarily followes, and therfore with as many *proper* motions as the Neck is moved with, with ſo many *ſecundary motions* is the *Head*; theſe *Archangelus* calls *Muſculos Cervicales*, from moving the Neck; they are *foure paire*; Which as a kind of *Chorus* encircling it in a Ring, embrace the *Head* and *Neck*, being ready preſt to obey the *Becks* and *nodding Commandements of the will*. The foure firſt paire alſo of the *Muſcles* of the

Back

Back are *ſubſervient* to the motions and ſignifications of the *Head* and *Necke*, & are *Muſculi adjutorij*, reckond by *Veſalius* & others, among the *Muſcles* of the *Head and Neck*, although not ſeated in thoſe parts. The chief commodity of the *Neck* was to ſuſtaine the various motiõs of the *head*, wherin there is a new thing & truly admirable, that in the *joynt* of the *head* the *greateſt bone* is coupled and put upon the *leaſt* almoſt, whoſe nature is ſo obſcure, that it is controverted by many. And *Galen*, the *Miracle of nature*, and the moſt exquiſite *Interpretor* of motion, in weighing the conſtruction of any part, requires not ſo learned and witty an Auditor as in the motions of the Head, and with the difficultie of the matter affrighteth his Reader, as *Veſalius*, in this point of Articulation (unworthily ſcoffing) obſerves of him. Notwithſtanding this is agreed on by both ſides, that every motion is performed upon the *firſt* or *ſecond vertebra* of the *Neck*, whereof in leane and conſumed men, we may make an experiment, if we put the *index* of our Hand about the pit of the hinder part of the head, or nape of the neck; for we

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ſhall then perceive the *firſt* and *ſecond vertebra* to be more moved than any of the reſt; the motions of the other joynts are neither ſo valid nor manifeſt, and very difficult to obſerve, ſo that they cannot be diſcerned in the very act, by every man; So obſcure are their motions, that unleſſe you bend your whole mind, there is no comprehending of them: but the motions of the *Head* upon the *Neck*, which expreſſe divers affections of the mind, are ſo manifeſt and evident, that they are hid from no man. The ſtructure of the joynt being very remarkable? for, ſage Nature moderatrix of all opportunities, when ſhe foreſaw that *many motions* were neceſſary for the *Head*, and that it could not undergoe them unleſſe the bones were round and committed to a ſimple Article looſly bound, knowing that the *ſecurity of conſtruction* would be repugnant to the *variety and agility of motion*, and ſollicitous for the nobleſt part, though ſhe alwayes in the firſt place caſts for the *dignity* of the Action, and in the ſecond for the *ſecurity*, conſulting for both in *this joynt*, choſe rather *ſecurity*, than the *va-*

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riety and agility of motion; for, ſeeing they were incompatible and could not ſtand together if it were tide looſely and free to turne every where; ſhe gave it a few motions and thoſe ſafe, rather than many with the perill of the Head: and becauſe the ſcope of *variety* was not to be contemned, therfore provident Nature what ſhe could not with the magnitude and laxity of one Article perform, ſhe recompenſed with two ſmaller, and a multitude of *Muſcles*. For which cauſe no motion ſeemes to be wanting to the Head. But although the conſtruction or the articulation and compoſition of the Neck is provided for locall and voluntary motion, yet there is no *Action* of Articles but onely a *Paſſion*; for ſo much as the *Article* or joynt acts nothing but onely is moved, but to be moved, is to ſuffer, when not by its proper motion, but by ſomething placed without it is moved, not by it ſelfe, but by the *Muſcle*; wherefore if the *Action* of this joynt is a *motion*, it is not done by *acting*, but by *ſuffering*, and the motions and ſignifications are to be attributed to the *Muſcle*

cles which are the inſtrumentall cauſe. Laſtly, that the Head in violent motions and agitations might not goe beyond its bounds and ſuffer a Luxation, which is deadly, there are foure ſtrong ligaments to eſtabliſh and better ſecure their motions, which are of great moment to be known exactly by thoſe who would rightly perceive the motion of the *Head*, or diſpute of their ſignifications: Provided and furniſhed with theſe accommodations, the *Head* can with what equipage is requiſite, at an inſtant, attend the motion of the mind, and attempt and diſpatch all the important negociations and patheticall affaires of the will or Appetite.

Diſſect. I.

WHen wee *aſſent*, *affirme*, *yield*, *grant*, *vote*, *confirme*, *confeſſe*, *admit*, *allow*, *or approve* of a thing, &c. wee are wont to *Nod or bend our head forward*. *Galen* aſcribes this motion to the Head, where he ſaith, *Flexio fit annuendo*: which *Veſalius* expounding ſayes, He meanes of that *motion* whereby wee bend or incline our Head forward in *aſſent* or *approbation*

on. The naturall reaſon of which moti-
on in theſe ſenſes is, an approving which
is made by the Imagination ſeeing o
hearing ſomewhat done or ſaid which
accordeth very well, and this power re-
maineth in the Braine or forepart of th
Head wherein the Cell and Seate of th
Imagination is, when any of theſe thing
give it contentment, ſuddenly it moves
the ſame, and after it all the *Muſcles* o
the Body, eſpecially of the Head th
chiefe Sphere of its activity, and ſo ma-
ny times we allow of witty ſayings o
actions, by bowing downe, or Nod-
ding of the Head. The *Muſcles* appoint-
ed in a *Right motion* of the *Head* to exhi-
bit the *yielding flexibility of the will*, a
the upper portion onely of the pair
of *Muſcles*, commonly called *maſtoi-
dean* or the *mamillary paire*, becauſe in
ſerted into the *Dug-like proceſſe* of th
Temples, ariſing with a double origi-
nall, diſtinguiſhed with a certaine cavi-
ty, whereof one begins at the top of th
Sternon, the other proceedes from th
higher part of the Clavicula where it
joyned to the Sternon; Seated in th
forepart of the Necke under the ſqua-

Muſ

Muſcle of the Cheekes: For when this part of the aforeſaid *Muſcle* enjoyes the action alone, the Head it ſelfe onely by the firſt fibres which are infixed into the firſt and ſecond vertebre, is moved to *aſſent*. Whichportion, inſooth, hath ſometimes a peculiar and cleere circumſcription or delineation which anſwers in proportion to thoſe ſmall *Muſcles* which are behind: for ſince the ſignifications that are performed by the Head alone, are very ſhort and light, and the Head being heavy, by reaſon of its weight is eaſily depreſſed or let downe to the anterior parts, two ſuch ſmall *Muſcles* were ſufficient for this action. If any man would make triall to find after what manner this ſignificant motion of the Head is done, having got a freſh humane carkaſſe, the other parts beſides the ligaments of the vertebres being taken away, driving the *Head* foreward and backward with his hands, He ſhall eaſily perceive it to move firſt by it ſelfe, and ſhall thence conjecture the ſmall *Muſcles* inſerted ſtraight into the Head, to be the chiefe authors of the motion. Note that wheras this *juſt flexion* of *aſ-*

ſent is cauſed by the *Heads* urging and impelling the ſecond vertebre by the benefit of the ligament of the Tooth, the *Muſcles* on each ſide working together: So if the *Right Muſcle* only be contracted, the Head drawne by *oblique fibres*, *obliquely aſſents* Leftward: the *Left Muſcle* onely working, the *Head aſſents forward*, but to the Right Hand; which you may ſee repreſented in the raines of a Horſe. But nothing can better ſhew you how to conceive of the office and function of theſe *Muſcles*, than if you ſhould put a garter athwart about the hinder part of the *Head*, bringing it from above the ears on each ſide-down to the breaſt; for if you afterwards draw both the ends of the garter together, the *Head* wil give a *juſt Nod of aſſent*: but if you pull the ends by turns one after another, you will cauſe *Collaterall Nods*, ſuch as wee uſe when the partyes to whom we make the ſigne are on one ſide of us. Now theſe *Small Muſcles*, commonly accounted the upper portion of the *maſtoideus* or *Mammillary paire* (though their prope circumſcription ſeeme to give them the Delineations of a Diſtinct paire) affor

the *Dug-like process of indulgency*, expressed by *assenting Nods*, giving them a proper name from the affection and signification of the mind they help to exhibit, they may be called *Paranuens*, the *assenting*, or *yeelding paire*, or the *muscles* of *Approbation*. When the Head in assenting is more manifestly bent forward, and compell'd to Nod, then the whole Mastoidean paires work together, the lower portion of those Muscles being most active in the fuller Declaration of the mind which appeare under the *Oesophagus*, a paire seen before the carcasse is excoriated in leane, and old men, and men living, being those which in antique Coines were observed with so great diligence by the Ancients; the profoundnesse of this paire yielding a signature of a deeper assent, and might for Distinction be called *par affirmans*, the *affirming paire*, or the Muscles of Concession.

Dissect. II.

WHen we would bow low, as in *assenting with reverence*, or

to *adore, worſhip,* or *profeſs a ſubmiſſive reſpect,* the whole Neck with the Head is inclined and lowly bent forward, in which large expreſſion of the Head and Neck, after the ſecond vertebre the third is moved, then the fourth and all the reſt, the lower the vertebre is ſo much the obſcurer motion it obtaines, and the laſt the ſhorteſt. This motion is performed by the Benders of the Neck, which are two paire, the firſt paire commonly called *Longus,* lying under the *Oeſophagus,* is long, ariſing with a ſharp and fleſhie beginning from the Body of the fift vertebre of the *Thorax,* on the fore part where it is joyned to the Rib; this aſcending upwards, is annexed collaterally to all the Bodies of the Vertebres, even to the firſt of the Neck where both the Muſcles touch one another, and with an acute and nervous tendon it ends in the proceſſe of the firſt vertebre, which is the ſtandart or proportion to the body of the other Vertebres, that the Neck might be bent. The ſecond paire of Benders commonly called *Triangulare* hath a fleſhy and large original from the firſt and upper Rib of the *Tho-*

rax,

rax, afterwards maintaining its course towards the Face, it grows narrow, and is terminated with *oblique fibres*, in the transverse processes of all the vertebres of the Neck where they look inward; for, these muscles working together, bow the Neck right forward, and so consequently the Head. The first long Muscles which so appeare active in these Declarations of the Mind might by ourscope of Denomination be called *Par reverentiale*, the Reverentiall paire; The other commonly called *Triangulare*, for distinction, *Par adorans*, the Muscle of Worship or Adoration, or the Muscles of the yoke of submissive obedience; and that well grounded upon the naturall Philosophy of Gesture; The bowing down of the Neck with the Head, naturally implying a professed submission, even to the taking up of the yoke of obedience. This motion may be also collaterall, when either of the paires work alone, for then they incline the Neck and Head forward towards the side of the contracted Muscle.

Diſſect. III.

WHen we lightly *diſlike*, *refuſe*, *denie*, or *reſent* a thing, we uſe a caſt-up backward Nod of our Head, a motion diametrically oppoſite to the forward motion of aſſent; and this ſignification of the mind is performed by the extenſion of the Head according to *Galen*, *Extenſio ſit abnuendo*. *Veſalius* taking upon him to expound *Galens* meaning in theſe words, ſaies, they are meant of that motion of *Denial* wherein we reflect or recline our Head after that manner as the *Thracians* and moſt of your *Cretans* even at this day ſeeme *Abnuere*, that is, to refuſe, and denie; for when they *refuſe* or *denie*, they move their Heads ſtraight backward, and lift and caſt it up, not as we *refuſe* and *denie*, who drive the head about in a circumduction. Here Divine *Veſalius* (as *Fallopius* his ſuperſtitious Admirer often cals him) the *Anatomique Argus*, who never took a nap in Diſſection, appeares guilty of a drowzie Nod of Cavillation, in making ſo blind a Comment upon ſo cleare

cleare a Text. But indeed, the luck of his divine wit hereabouts fail'd him and proved mortall, which hath cauſed ſuch great Digladiations among Anatomiſts, as to divide them into Sects, one part endeavouring to maintaine his Cavill againſt *Galen* in point of articulate motion, according to his provinciall garbe of *refuſing* and *deniall* : The other ſtrongly repulſing the Calumny. But as to the ſignification of the affection of the mind exhibited by this geſture, none have minded it ſo far as to undertake a vindication; which ſince it is not only a miſtake of the mind of the noble Pergamite, but comes overthwart to endanger the principles of our univerſall and naturall Language of the Head, I am engaged (ſaving the reverence due to ſo great an Anatomiſt) to make head againſt him, and to ſay, *Veſalius non vidit omnia.* To which purpoſe, an inference from his own words in that place will ſerve; For, *Veſalius* ſpeaking of thoſe anterior Muſcles that officiate in the motion of *Aſſent*, ſaies, they are altogether contrary to the firſt foure paire of Muſcles placed in the hin-

der ſeat of the Neck; neither can any thing ſo exactly ſhew the function of the poſterior Muſcles, as thoſe Muſcles of Aſſent, for they have the ſame motion forward, as the other have backward. Being their motions, then, are Diametrically oppoſite, ſo are their ſignifications: for if we uſe, as we do, the flexion of the Head to ſhew our *aſſent*, and that properly according to the univerſall intention of Nature; the contrary motion to that, muſt as naturally imply *diſlike*, or *diſſent*, or *reſentment*. And if we Nod from us when we *bid one go*, Nodding to us is a geſture of *invitation*, and calls and bids them come unto us; the firſt ſignifications being made by the co-operation of the ſame Muſcles of *aſſent*, as likewiſe the Nod of *Command*, *Direction*, and *Demonſtration* are; the ſecond, by them he grants to have an Analogicall contrariety of ſituation and motion unto the other; which from thence might be called *Muſculi imperantes*, *Dirigentes*, *Demonſtrantes*, and *Repellentes*, the inviting or repelling Muſcles. And if *Galen* had ſaid, *Flexio fit repellendo*, *extenſio fit advocando*.

cando, or *invitando*, this would have pleas'd *Veſalius*, who ſeemes to me in this matter guilty of that fault, which *Fallopius* grown wiſer, and leaving off *Jurare in verba magiſtri*, is bold to accuſe him of, that is, He rather carps at *Galens* words than his meaning; and here he ſeemes to quarrell at the ſignification of the word *Abnuendo*, as if *Galen* had improperly uſed that word with reſtriction to a Nationall garb of ſpeaking by the Head; whereas *extenſio fit abnuendo*, according to *Galens* true meaning hath an undoubted reference to the univerſall and naturall way of *deniall* or *diſlike*, which all Nations of the world agree in, being as common to other Nations, and ſo to *Veſalius* his Countrymen, as to the *Thracian* and *Cretans*: And he might have as well expounded *Flexio fit Annuendo*, to have been a *Thracian* or *Cretane* property. So that *Galens extenſio fit Abnuendo* (even in the naturall univerſality of its ſignification) may be rationally maintained. Now the inſtruments of this extenſion according to *Spigelius*, whoſe deſcription (to avoid the confuſion and contradiction

diction I find among other Anatomiſts) I here follow, are foure paire, commonly called the *extenders* of the Head, whereof the firſt paire, known by the name of *Par triangulare*, *Scalenum*, and ſo called from their figure, and by ſome *Splenium* for the reſemblance it hath to the Spleene, affording thence a ſignature for a *Splenetique motion of diſlike*, ariſing with a twofold beginning, one proceeds from the tops of the fift, fourth, third, ſecond, and firſt vertebre of the Breaſt: The other from the five Snigs of the lower vertebres of the Neck, and with ſomewhat *oblique fibres* are inſerted into the midſt of the *occipitium* which is between the eares. The ſecond paire of theſe Extenders, ſubject to the other, is known by the name of *Trigeminum*, or *Compoſitum*, becauſe endued with a threefold origination, that it ſeemes to be compounded of three Muſcles; the firſt has an acute beginning, proceeding from the tranverſe proceſſe of the fourth and fifth vertebre of the Breaſt, and is inſerted into the midſt of the hinder part of the Head, therein ſeeming to have a ſignature to accommodate a

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ſharpe croſſeneſſe of diſlike, which riſing from under the Spleene, and aſcending to the Breaſt, and from thence to the Head, hath therein made an impreſſion of *reſentment*; the other ariſeth from the Snig of the ſeventh Vertebre of the Neck, and grows into one with the other before its inſertion; the third coming out from the tranſverſe proceſſes of the firſt and ſecond vertebres of the Breaſt, is ſtrongly faſtened into the hinder part of the Head. The third paire commonly called *Recti majores*, The right Majors, doth preſently occur under theſe; and proceed from the top of the ſecond vertebre of the Neck, and are inſerted into the hinder part of the Head. The fourth paire called *Recti minores*, ſeated under the greater, ariſing from the knob of the firſt vertebre of the Neck, which holds Analogy with the Snigs of the other vertebres of the Back, and end in the middle *occiput* under the ends of the *Recti majores*. By the help of all theſe Muſcles (whoſe Dualities, multiplicities of principles, and diviſions inſerted into the Head are not without ſome ſignature of *diſagreement*, and *diſlike*)

like) if one paire of them work together in Conſort, the Head is extended ſtraight backward, to *diſallow*, or *deny*; If one of them work alone, we refuſe and deny ſomewhat obliquely, which oblique averſeneſſe anſwers in the proportion of contraries, the forward collaterall Nod of *aſſent*, and *indulgency*. And it is obſervable, that the long and great Muſcles are alwaies firſt moved in this motion of *Refuſing*, and *Deniall*, but where the Head is extended after a manner to an *acute angle*, the Right relieve the other, for, the long Muſcles cannot performe that action, but it is ever done by the ſmaller Muſcles; which we will therefore call *Muſculos Abnuentes*, the *Refuſing*, and *Denying Muſcles*. But before I end this Section, I muſt crave leave to ſmile by way of obſervation at a great Anatomiſt, whom I find running away with an errour inſtead of a conceited verity, and one of the ſworn Vaſſals to his judgment, ſtrongly following the Heu and Cry after him; Who having abſurdly robbed *Galens* univerſall *Abnuo* of a Muſcle, or part of a Muſcle, under pretence of a *Thracian*, or *Cretan* Recuſant,

Recusant, to enrich his Country *Abnuo*, hath by his envious robbery committed a contempt against the Sanction of Nature, who intending the Head to be the *Ballance* of the Scule, wherein the Cell of Judgment, seated in the midst, as the Tongue of the Beame, to keep the Head in *æquilibrio*, untill the Judgment moved it to incline, or rise, hath to that end (for Counter-ballance) planted many Muscles behind to counterpoise the inclination the Head hath, by reason of its weight, to propend or weigh down in too easie *assents*; by reason wherof man is equally disposed in respect of the Organ, according as he sees good, either to *approve*, or *dislike*. To speak plainer, *Vesalius* taking the fourth part of the Muscles *Trigemini*, which *Fallopius* makes an exact and distinct Muscle, which the Will useth lightly to *dissent* or *refuse* by Nodding backward, *Vesalius* joines this in commission with the Muscle commonly called *Superior oblique*, and makes it serve to *Denie* by a circumduction of the Head, from whom *Fallopius* justly dissents, with Arguments well grounded upon the Philosophy

ſophy of voluntary or arbitrary motion, and its important ſignifications; diſcovering withall the occaſion of this *Veſalian* Deception. Againſt which abhorred Soleciſme of *Veſalius*, *Fallopius* argues after this manner. If, ſaith he, the *Head* cannot be moved round, unleſſe after the moving of the firſt Vertebre, which is evolved about the Tooth of the ſecond, it will be neceſſary that it ſhould be firſt moved by this Muſcle, and upon its moving, the Head alſo ſhould be turned: but this cannot be done; Therefore it doth follow, that it is not the Inſtrument of moving the Head round. For let us look to its riſing and inſertion [which indeed is the rule to diſcover the courſe of a Muſcles Motion] if the Vertebre is to be turned round, the *riſing* or originall of it will be in the *occipitium*, and the *inſertion* in the tranſverſe proceſſe of the ſaid Vertebre. Now let this Muſcle act, if in the meane ſeaſon the *Head* may be moved, it cannot act, becauſe there is need of the reſt of that very part from whence it ariſeth if it muſt draw: If therefore it be granted that the *Head* may reſt, the

Muſcle

Muſcle working, the Vertebre will be led about, but upon that motion the Head alſo is wheeled round; therefore it will happen that the *Head* together and at the ſame time may be *moved* and *reſt*. But let us grant the *Head* to be moved when this Muſcle acts [*Deniall.*] Now the quære is, whether it muſt be moved with a contrary, or the ſame motion? If it may be moved with a contrary, a concourſe without doubt will enſue, and ſo the Head will not be moved upon the motion of the Vertebre; becauſe the Vertebre would be agitated to the Right Hand, and the *Head* to the Left, by contrary motion, whereby they would contur and meet together. But let it be the ſame motion, that both are carried to the Right Hand; I aske again (ſaith he) which ſhall have the precedency in motion, the *Head*, or the Vertebre? 'Tis likely it will be anſwered, the Vertebre ſhould precede, becauſe that is moved *per ſe*, but the Head by *accident* upon its moving: But the principle or beginning of moving comes from the *Head*, becauſe the Muſcle ariſeth from thence, which draws it, therefore it will follow, that

that the vertebre is moved by the Head; and not the Head by the vertebre, which is againſt his owne opinion. Yet ſome may anſwer, that the *Head is driven* round by this *Muſcle*, beginning at the vertebre and ending in the Occiput: but if this were granted, it would follow, that this *Muſcle* ſhould move the Head *per ſe*, and not by the motion of the vertebre, and in its proper Article, which Article according to *Veſalius* is unfit for circular motion. Wherfore if we ſhould grant this *Muſcle* to ſerve for the *circular motion* of *Denial*, [and not the extenſive] ſome of theſe diſcommodityes will neceſſarily follow, which are deſtructive to that true, nay moſt true opinion of the Head in orbe by accident.

Diſſect. IIII.

WHen we would *mock*, *deride*, *contemne*, *disdaine*, *threaten* or *rebuke*, we uſe an ironicall motitation or wagging Nod by the flexion and reflection of our Head in turnes in a quick ſucceſſion, both which motions, peculiar

peculiar to the Head, are done in ſequence by the *Muſcles* of *Aſſent* and *Deniall* making as 'twere a mixt motion, and that emphatical and properenough, for an ironie, where the firſt action imports approbation, and the ſecond coming in the interim and immediately upon the nick of it before it is fully done, by a contradictory motion compounds it into an ironie. Like unto this, is that motion of aſſent in old men, from whence the Adage came, *Omnia omnibus annuit*, touching the paraliticall indulgency of old men, who are not by the complection of Age ſo free, but they inſtantly recall their graunts, for in them this *Nutus* and *Renutus* ſignify nothing, while that which is by transferring downwards, alwayes ſucceedes that which is done upwards, and the downward motion againe received of the upward, the motion is made double and compounded, while the Head interchangeably changeth place, which trembling is a *voluntary motion* depraved by reaſon of an equall fight between the *moving faculty*, and the *gravity* of the moveable part, ariſing from the imbecillity

lity of the moving Function, which *Galen* approves. Now of *voluntary motion* which is undergone, not according to Nature, there is one forme which is called *Tremor*, which he proves againe, ſaying, motion in thoſe who will not move a member, we call *involuntary*, but in them affected with trembling, the motion comes not but from the command of the will; but is ſaid depraved and not according to Nature, although it depend upon the empire of the will, for it wants that convenient motion intended by the inſtitution of the will: for although it be altogether excited *ab impetu*, yet the motion periſheth, by reaſon of the imbecillity of the faculty. There are ſome found who deny the Impetus can poſſibly be ſeparated from the Tremor, becauſe they ſomtimes ſee the whole Head to tremble and to be ſhaken, no will or diſpoſition to move concurring therewith: But they ſeeme not to know that to keep any part erect, the cõmandment of the Will is required; becauſe *muſcles* in this, ſcarce otherwiſe then in other functions, are ſtrained; & therefore you reſt a trembling Head upon a cuſhi-

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on, you shall soon stay the trembling, nd free it from that motitation. And ence it is that we know this motion of he Head is voluntary.

Dissect. V.

When we *reject*, *refuse*, or shew an extraordinary *dislike*, we use to urne away our Head. This is the actin *Vesalius* would have so proper and eculiar to his Countrymen in point of *efusall* and *deniall*; Which indeed is like naturall and common to all Natiens, that of *Extension*, which *Galen* eaks of, and this of *Circumaction* being oth significant to shew *averseness* of the lind, unlesse you, as *Vesalius* seemes to o, will imagine this way of *rejection* nd *deniall* by the *Circumduction* or turnng away of the Head to be the more mphaticall of the two, by reason of he obliquity of the Gesture. Yet in he other Naturall way of Refusall or Deniall by the Extention of the Head, lthough it is done so straight backwards, the same Muscles when one of paire work alone have a power to effect

effect some obliquity, which they often put in practice upon this occasion. The Instruments of this oblique motion of *Refusall* and *Deniall* are the two paire of circumagent Muscles, commonly called the Oblique Superior and Inferior, from their situation; both of them lying under the Right Extenders, to which they are correspondent in substance and forme, exhibiting thereby a signature of some vicinity and likenesse in the substance of their significations. The upper paire from the middle of the Occipitium arising neer the outer side of the *Recti majores* obliquely descending, is transversly inserted into the top of the transverse processe of the first Vertebre of the Neck. The inferior paire derived from the Spine of the second Vertebre of the Neck ascends obliquely, and is inserted with the former into the transverse processe of the first Vertebre. These when they *are* contracted drive round circularly towards the *Spine* backward the first Vertebre upon the second, whence it comes to passe that the Head consisting thereupon, is together circularly

moved

noved. But becauſe theſe are ſome-
what ſmall, the two firſt extending
aire, when one of them acts, doth
ſiſt the motion; and it ſeemes there is
reat community and reciprocall enter-
ourſes of relation between the Right
xtenders and the Oblique Superior, for
ccording to ſome, when the Oblique
uperior, that is the whole paire, doth
ork together, their Office is to help
e Head ſtraight backward to act a
ght *Refuſall* or *Deniall*. Well, ſince the
bliquity of theſe Muſcles, their ob-
que deſcenſion and aſſenſion, tranſ-
erſe inſertion into tranſverſe proceſſes
all ſpeak allegorically by their cor-
ſpondency of ſignature a ſerviceable
meſſe for the oblique expreſſion of a
ejecting mind, turning away by a *Refu-*
g geſture, they might be called
uſculi Rejectionis, the Muſcles of *Re-*
ion, *Improbation*, or *Diſallowance*, or
Recuſants: But moſt properly, *Muſ-*
li Renuentes; for whereas *Abnuo*, and
nuo, are both words ſignificant to
port a *Refuſing* or *Denying* by Nod-
ng of the Head; Whereas *Galen* ſaies,
tenſio fit abnuendo, I would ſay *Circ-*
cumactio,

cumactio, or rather, *Semi-circumactio* [illegible] *Remendo*, which would not only ſer[ve] for a Diſtinction, but if Critiques wo[uld] give me leave to expreſſe my Fantſie [in] this matter, which is a little out of the [reach], it would prove as proper to e[x]preſſe this *Refuſall* or *Diſlike* perform[ed] by a *backward ſemicircumduction*, as *Ab[duct]* does to ſignifie that *Refuſall* or *Diſlike* exhibited by a *ſtraight backward extenſion of the Head*. Wherefore to adapt the new *Nomenclature* to the ancient modell; whereas in that, theſe Muſcles are called *Obliquus ſuperior*, and *Obliquus inferior*; according to our Doctrine and ſcope of Denomination, they ſhall paſſe by the name of *Renuens ſuperior*, and *Renuens inferior*, the ſuperior and inferior or Muſcles of *Diſlike*, or the upper and (as the lower *Recuſantes*. ¶ That this Action of the *Recuſant Muſcles* ſhould not be underſtaken without underſtanding and judgment, we have a hint, in that the motion is ſo proper to the *Head*, that the *Neck* is deſtitute thereof; for, this motion, wherein the Head is driven and rolls as a wheele upon an Axeltree, exhibiting a circular motion (though the

is no exact circular motion in the Head
but ſemi-circular only, for we cannot
turne our Head in orbe, that is quite
round) may be done the Neck *quieſcent*,
if you ſtrive to look by turnes to the
Right Hand and to the Left by a cir-
cumverſion of your Head; for after
what manner ſoever you order the po-
ſture of your Neck, this ſemi-circum-
action of the Head is commodiouſly
performed. For when men *bend* their
Neck and the Head inclined therewith,
as *She-pe-biters* in their *ſhamefull feares*,
and *ruſtick baſhfulneſſe* are wont to do;
Or if the Neck be *extended*, as in *Refu-
ſall* and *Diſlike* it uſually is, and in *feare*,
and *jealouſie*, and *dread*, which makes a
man *circumſpect*, and to weare his Beard
(as the Spaniſh Proverb ſaies) upon one
ſhoulder; Or if the Neck be *Loftily ex-
tended*, as in *proud men*, who look aſide
upon men, as they ſay, over one ſhoul-
der; Or whether the Neck be bent
down laterally to one ſhoulder, as in
anguiſhing of the Mind; in all theſe
we may eaſily maintaine the gyre or cir-
cumaction of the Head: which ability
of motion was ordered to the Head out

of

of an obſequious regard to the eye, for that which is behind cannot otherwiſe bee ſeene by the eye, unleſſe the converſion of the Head relieved the Defect, and when we need more then this Capitall *Semi-circumvolution*, the thighes helpe to turne the Body round. So that the mind is every way fitted with *Muſcles* for circumſpection and wary heede. So that the ſame *Muſcles* which before were called the *Recreants*, might in reference to theſe affections of the mind, be called *Muſculi Timoris, Pudoris Ruſticani, Contemptus*. The *Muſcles* of *Feare, Ruſtique Baſhfulneſſe*, and *Contempt*, or *amici circumſpectionis*, the Friends of Circumſpection.

Diſſect. VI.

Light Diſpleaſure makes us *ſhake our Head*, and caſts it into a ſhort Ague of *Diſtaſte*; which geſture we alſo uſe when we *Diſſallow, chide, forbid, rebuke, condemne, doubt, lament, condole, repent, &c.* which action is nothing els but a ſlow and definite trembling, and an effect ariſing from the ſame cauſe that trembling and horror doe, namely from the retyring of the Spirits but in a leſſe degree.

gree. The *muſcles* by whoſe operation this important motion is produced are the oblique *Muſcles* of *Diſlike*, moving reprocally by ſhort turnes, and ſo duplifying the ſingle motion of oblique *Diſallowance*, into a redoubled and more ample circle of *Diſtaſte*. ¶ The quick ſucceſſion of the ſame oblique *Muſcles* of one ſide working alone, and their fellowes on the other ſide taking it by turnes to maintaine the rotation, accompliſheth (alſo) that motion of the enraged and frantick fury of the mind which wheeles and ſwings about the Head in the voluntary and giddy vertigo of *Phrenſie* or *Bacchanalian* fury. And becauſe ſome latter *Anatomiſts* have gone about to take away this act of *circumvertion* from the Head, if you deſire to ſee this motion, having gotten a Humane Carkaſſe, endeavour to remove all the parts which are laid over the Head and Neck (the ligamentes onely left) then cut that part of the skull which is covered with haire with a ſaw in orbe, and draw out the Braine with a portion of the Spinall marrow, afterwards bid another to comprehend the skull on both

ſides with his Hands, and to hold ſtrait the firſt and ſecond vertebre, that while you ſhake the Head you may try whether it may be moved after this manner to the ſides and in orbe; inſooth this motion although in it ſelfe ſomewhat obſcure, and is tryed in a dead Body, which is not onely deſtitute of naturall heate, but hath alſo by reaſon of cold the ligaments almoſt contracted, yet it is not ſo ſmal, that it may not anſwer the ſmall *Muſcles* which cauſe it, and which have no other office than to accommodate the ſignifications of this motion.

Diſſect. VII.

IN *Supplication, tenderneſſe of love and humility, ſervile reſpect, flattery, reverence*, and obſequious regard, &c. *moderate bowing the head to one ſide* is often uſed, the better to move others to compaſſion, by that languiſhing poſture of the Head. This oblique motion is of the ſecond kind of motions, and of the three differences wherein an oblique motion may be done, this may be truely called oblique; which motion is peculiar and private to the Neck, according to

ſalius who challengeth this as a peculiar: for, the Head obtaines no peculiar motion of laterall inclination, but is carried to the ſide by the benefit of the Neck only, and by a ſecondary motion: for, the Neck unmov'd, and rigid, we have no power granted us to bring the Head any way towards this or that Scapula, untill the Necke be turned thither. The intimations of the mind that are exhibited by this laterall motion of the Neck, have no peculiar *Muſcles* aſſign'd unto their action, there being not particular and private *Muſcles* allow'd to every motion of the mind energetically working out its ſignification by the motion of the Head: for, this oblique motion is perform'd when one of the Flexors and Extenſors of the Neck work together. *Euſtachius* ſees nothing to hinder (yet he will not affirme it raſhly) that theſe ſignifications of the mind may be often exhibited, when two *Muſcles* of the ſame ſide, yet of divers yoakes or conjugations, to wit the forward and the hindermoſt from the Head inſerted into the tranſverſe proceſſe of the firſt vertebre, work together, for the Detri-

ment of moving which neceſſary fol-
lowed the ſecurity of the Article of the
Head, is ſufficiently recompenſed by Na-
ture with the multitude, magnitude,
various ſituation of *Muſcles*: So that
the *Flexors* and *Extenſors* of one ſide
contracted together, the Head followin
the motion of the Neck, is driven to th
Right or left Hand, wherein they ob
teine their ſituation, and according
theſe worke more or leſſe by reaſon
their fibres, this ſtraight obliquity
more emphaticall. And although the
being no proper *Muſcles* aſſign'd to th
action, the *Muſcles* that cauſſe it ma
no peculiar Denomination; yet we m
call that *Flexor* and *Extenſor* when th
appeare working together, (eſpecia
upon the ſame Right ſide) *Muſcu*
Supplicationis or *Adulationis*, the *Muſ*
of *Supplication* or *adulation*, or the *O*
quious flatterers: ¶ In *extraordi*
languiſhment of the Spirits, and in Effe
nacy or *wantonneſſe* of the mind,
Head uſually is ſeen to fall to the Ri
Shoulder. But why this *Caput langu*
or *mollitiei*, this head of languiſhmen
effeminacy, ſhould alwayes ſinke to

Ri

Right ſhoulder, is a ſubtilty worth the Scanning. *Baldus* thinkes that in theſe maladyes of the mind, the Neck and Head may incline more to the Right hand than to the Left, becauſe the *Muſcles* on the Left ſide are more eaſily reſolv'd than thoſe of the Right, as being leſſe nouriſhed; for that it is more cold and weaker than the Right; which happens becauſe it is leſſe moved and exercized. Now ſince they who are drenched in theſe maladyes of the mind, cannot incline their Heads backward nor forward in regard of the vertebras, and thoſe ſtrong *Muſcles* implanted in the proceſſe of the Iugall-bone and Breaſt, it remains therefore, ſince their *Muſcles* are laxe, abounding with overmuch moyſture, they ſhould, as men drowzie, let their Head fall to the Right or Left ſhoulder; and withall, their Heades abounding with excrementitious humours, cannot be ſuſteined, but are ſo inclined, and perchance rather to the Right Hand than the Left for the aforeſaid reaſon. And indeed they may well be ſuppoſed to have the Ligaments of the Left ſide more ſlacke and remiſſe, which

notes out much ſoftneſſe and ſuperfluous moyſture predominant in the Left-ſide, by which, when the Muſcles and Ligaments of that ſide are looſened, the Head by its weight is bent to the oppoſite ſide, as it happens ſometimes the Cheeks to be drawn awry to one ſide, when there is a reſolution of the Nerves and Ligaments of the other ſide.

Diſſect. VIII.

PRide, *Arrogance*, *Ambition*, *Inſolency*, *Inſultation*, *Confidence*, *Diſdaine*, *Magnificency*, *Magnanimity*, and the *odious vanity of Bragging and boaſting*, beare up the Head aloft, by reaſon of which garbe ſuch who uſe it are properly called *Cervicoſi*, that is, *Elate* and *arrogant*; which action is performed when all the hinder Muſcles of the Neck and Head and that confuſed Chaos and heape of Muſcles in the Back, which are like a Labyrinth of many waies, work together; for then by drawing the Neck ſtraight backward, they extend it and keep it erect as a Maſt of a Ship is with Cords, which poſture is *Tonique*, and

hath theſe ſignifications when it is moderately ſo held without any vehemency; and we might call this action of the Muſcles, the *Combination*, or *Conſpiracy of Pride* and *Arrogance*: or the *Braggadochios plot*. ¶ But in *fierce audacity*, when we would *affront*, *defie*, *upbraid*, and with an *execration* expreſſe *cruell anger*, we augment the tenſion of the *Muſcles*, and confirme our Head to a Chamelion-like inflexibility, ſetting withall our face (with the veines retched out) againſt others. Anatomiſts call this, among the five figures of the motion of Muſcles, according to *Galen*, *Extreme figure*; where there is an immoderate contention, wherein the parts are vehemently ſtretched out, and wherein the *Muſcles* of both kinds work together, and ſometimes beyond their ſtrength; but chiefly when we compell a Member to perſiſt longer in that tenſion, for we cannot long endure the great ſtreſſe of the *Nervous fibres*. But this Tonicall figure may be more or leſſe intenſe according to the pleaſure of the mover. This rigid forme of *fierce audacity*, looks like a Crampe or Crick in the Neck,

and makes the Muſcles to remaine ſo ſtretched out, that the Head and Neck ſeeme indeed immoveable, but yet in truth the Muſcles are moved in conſervation of the contracted Muſcles, ſuch being the nature of ſucceſſive motions (as *Laurentius* ſpeaks) that they are no leſſe done while they are ſo kept, than when they were firſt begun: We may call this generall concurrence of the Muſcles, when they are thus perceived to act with perſeverance, *Tetanum oppoſitionis*, the *Rack* of *oppoſition*, or the *voluntary Crick* of *ſtiffenecked Cruelty*. But this caſe of *Tonique motion*, being abſolutely the greateſt myſtery that relates to Voluntary motion, deſerves a better enquirie. Firſt, This Action is of the ſame kind with *Contruction*, that is, they agree in the *Genus* of the Action, *but ſpecifically* differ: Yet *Galen* doth not expreſſe what *Species* of motion it is of. So that this Action is not a change of place, but only an Action with immobility. *Galen* calls that Action of the Muſcle without locall motion, *motum Tonicum*, which perchance with him was all one as to reteine the part in the

place

place from whence it would recede, unleſſe it were deteyned by the Action of the Muſcle: for, all immobility (as He proves) is not cauſed by the privation of Action: for, a part that is ſuſteyned and held firme in one poſture that it ſtirs not, could not be done, unleſſe they did Act; for elſe it would be altered, or fall by the weight of the Body. Whence it doth follow, that all immobility doth not depend upon the privation of Action, but upon ſome Action of the Muſcle: But the Action of a Muſcle is motion, for, the Action of a part is defined by *Galen* an Active motion, but reſt is contrary to motion. *Galen* takes this for a hard and difficult queſtion; yet he hath many kinds of this motion from experience and ſence; as that of a bird hanging in the Ayre, and of one ſwimming againſt a ſtreame with equall ſtrength, the moving faculty raiſing it up equall to the weight of its body depreſſing, and the ſtrength of the ſwimmer equally contending and ſtriving againſt the force of the ſtreame. *Serpillon* imagines this to be an action mixed of *tenſion*, and

contraction, which *Fontanus* his Antagoniſt will not endure to heare of. *Galen* in a moſt ſmooth and admirable modeſty of ſtile goes over the Rocks and depths of this myſtery: It is poſſible (ſaith he) to find ſome *motion*, all the Muſcles that are ordered for it ceaſing from their Action; and to find a *quieſcency* many Muſcles working: For, all motion is not cauſed by the operation of Muſcles, nor all immobility by their reſt. Now, whether or no ſhall we ſay that they do act and are ſtretched, but are not moved? And if we feare to ſay ſo, we muſt likewiſe ſay that they do not act; for 'tis abſurd to confeſſe they do work according to their innate and moſt proper Action, and to deny them to be moved; But they appeare not to be moved; yet becauſe the Muſcles act, therefore we ſay they are moved: but becauſe the whole Member whereof they are a part, nor they themſelves apart, do appeare to move; therefore for this cauſe again, we do not confeſſe they move; where therefore ſhall a man find a Solution for this doubt? From the name *Tonique*, as ſome have done

done? which comes of *robur id eſt firmo*. *Fontanus* has a good mind to help *Galen* out in this difficultie, but endeavours it with little ſucceſſe: This only he gathers from the Doctrine of *Galen*, that Action without motion of the Muſcle, is called a *Tonique motion*; Action with motion, *Contraction*; motion without Action born of the Contracted part, *Extenſion*; the Decidency of the Muſcle, a motion from the weight of the part and Muſcle. But ſeeing of the cauſes of Tonique motion *Galen* hath written little, *Fontanus* is at a ſtand, perchance thinking it would be an impudent Deſign to attempt any thing in that kind after ſo great a light of Phyſick, yet he puts the Quære, whence this Tonique motion ſhould come? and he ventures to conclude, from the motrice faculty commanded, as all other voluntary actions; for, the neareſt cauſe of this motion (as he conceives) is the Animal faculty which moves the Muſcles, and it is the part of that to ſuſteine the Members whoſe part it is to move them; wherein, after his great flouriſh, he hath made no more progreſſe than

the

the very words of *Galen* led him to; whom we find concluding, that this *Species* of Action, whether you call it Tonique, or by another name it matters not much, this is true: That in this *Tonique motion*, the Muſcles are not idle, but act by the Commandement of the Will. From this Tonique motion *Tarellus* took his Lepid Paradox (as he was wont to call it,) *In omni motu eſt quies, & in ipſa quiete motus*. The Muſcles moſt active in this expreſſion of the mind are the two paire of the Extenders of the Neck, the firſt whereof commonly called *Tranſverſarium*, ariſeth from the tranſverſe proceſſes of the ſix upper Vertebres of the Breaſt, are faſtened on the outſide into all the tranſverſe proceſſes of the Vertebres of the Neck. The ſecond paire commonly called *Spinatum*, occupies the whole hinder part of the Neck: This takes many Beginnings out of the roots of the Spines of the ſeven upper Vertebres of the Breaſt, and is ſtrongly implanted into the whole lower part of the Spine of the ſecond Vertebre. Theſe two, when they work together, firſt extend the Neck, and afterward

afterward the Head. The firſt paire might from thoſe workings of the Mind they help to exhibit be called *par arrogans*, the Arrogant paire or the Muſcles of Diſdainfull Confidence. The other paire of Extenders commonly called *Spinatum*, for Diſtinction might aſſume the name of *par inſultans*, the Inſulting or Bragging paire or the Muſcles of Inſolent Pride, and fierce Audacity.

Diſſect. IX.

THey who *like not a thing that has happened for which there is no remedy but patience, or they who are taken tardy and in the fact, and can no otherwiſe defend themſelves but by a tacite confeſſion; they who flatter, admire, are baſhfull, feare, doubt, deny*, or are *illiberall, or would frame an excuſe*, are wont to ſhrink the Head and contracted Neck between the Shoulders. There are divers Muſcles that concur to the expediting this ſhrugging and Chamelion-like expreſſion. The moſt active (for indeed the action outwardly performed ſeemes to ſuggeſt ſo much) is that Muſcle of the ſhoulder-

ſhoulder-blade, from its office commonly called *Levator*, or the *Lifter*; the Muſcles of this Conjugation even before Diſſection being obvious and eaſie to be perceived in all men, eſpecially in Wraſtlers; ariſing from the firſt, third, fourth, and fift tranſverſe proceſſe of the Vertebræ of the Neck, as 'twere in foure ſeparated beginnings, is inſerted into the higher angle of the Scapula, moving the Scapula forward and to the ſides of the Neck; and becauſe the ſhoulder is joyned to the Scapula, by accident it lifts that up alſo. *Lycas* among the Ancients was of opinion, that the Head was drawn down to the ſhoulder by this Muſcle. But *Galen* (who thinks it is better to ſay this Muſcle was formed for the Shoulders ſake, rather than the Heads,) ſaies, this alone was deſign'd to draw back the whole Shoulders to the Head; Wherefore if we ſhould take away *this* alſo from the Shoulders, they would be altogether deſtitute of ſuch a motion: But it has ſuch a motion, as is evident to all men; therefore it is the Muſcle that cauſeth this motion; if there be any other (as

no

no other there is) this is neceſſary, and this doth witneſſe its operation in the Shoulders, that a Nerve coming unto it from the Braine, if it be Cut, the ſame motion of the Shoulders and not of the Head is reſolved, of which Nerve *Lycas* was ignorant as He objects; and in his Anatomicall Adminiſtrations he teacheth a way to diſcerne the motion of this Muſcle, which is a generall rule, *to draw the Muſcle to its Head according to the Nature and poſiture of its fibres.* *Oribaſius* alſo will have this Muſcle to draw the Shoulders to the Head, and takes the courſe to prove it, in placing its originall in the Bone of the *occiput*, and the inſertion in the angle of the Scapula. But after what manner ſoever the motion be done, whether by the Heads drawing up the Shoulders, or the Shoulders drawing down the Head, or both; this Muſcle *Levator* is moſt active and evident in the motion, when it appeares to move the Shoulders upward to receive in the ſhrinking Head, and makes this Dive-dopper, or Dobchick of the Mind moſt ſignificantly Emphaticall. This motion and ſignification of the

Mind

Mind may be thought to be a little furthered by the aid of a portion of that Muſcle called by *Galen Trapezius*, from a Geometricall figure; to wit, that portion, which contracted, works the Scapula upwards, which is according as it may chance to be moved; for, this action of the Head may not be ſo exactly punctuall, as to the Garbe, in all men, by reaſon of the perſonall proprieties of men. This Muſcle is more commonly known by the name of *Cucullaris*; which *Laurentius* compares to a Maids Coiſe or Kercher, *Columbus* likens it to a Clout the Women of *Cremona* weare upon their ſhoulders; and *Veſalius* thinks that *Franciſcans*, and the reſt of the Orders of Monks borrowed the ſhape of their Hoods from this Muſcle; which being faſhioned round like a Hood, that is a little Cell for the Head, it ſeemes to have a ſignature of *abſconſion*, which it ſeemes to offer the Head, which ſeemes then aſhamed to ſhew it ſelfe, by helping the Shoulders to riſe, which then are moſt properly *Scapulæ à ſcandendo palum*, from climbing up the prop of the Neck. The originall alſo of this Muſcle being neere

under

under the Cell of the Braine wherein the Memory resides (which is now afflicted) & going transversly towards the Eares, which do now *male audire*; may in an allegoricall supposition be thought immediately affected, and to present it self in part as a Monke and Tacite Confessor of the living Monastery of Mount *Cephalon*, and of the Order of Nature. And indeed such impressions has a melancholly apprehension of such matters made sometimes in the Head of a Hypocondriacall *Nicodemus*, that they have ranged him to shrowd his Head in a Hood, and turne Monke and a Recluse from the conversation of men. Another Muscle that assists in this Action, is that which is commonly called *Serratus minor*, from the fashion of a Saw which it resembles, for, this with its upper *Fibres* alone, when they are contracted, may seeme to cooperate to the significations of this gesture; and the signature of that Muscle seemes, either to insinuate the doubtfull conflict of those thoughts which draw a man in this case by a various *vicissitude*, now into one frame of excuse, and then into another,

before

before they can resolve what is best for their turne (so that their thoughts seem, as *Festus* saith, *Serra pugnare*, that is, successively to move forward and to recede; and indeed this outward gesture if it chance to be repeated, doth not very much differ from the posture of those who work in a pit with a two-handed Saw:) Or else as *Placiades* observed, this signature of a Saw may signify Malediction, or as he calls it evill speaking, by reason of the row of Teeth which seeme to intimate some Mordacity, of which the Party labouring being very sensible by reason of that hated stridor that is so offensive to the Eares of those who are hit in the teeth with things wch it is too late to remedy; that it may be the Mind thereby now put into a sowre horror, such as a Saw causeth in the Body when it falleth into knots, bethinks it selfe what instrument it hath in readinesse in the Body (which indeed hath the Signatures of all things,) to fit its purpose in such an intricate nick of irresolution; and not being able soone enough to resolve the Doubt she is in, the Mind seemes by using this two-handed-

handed-saw *Muscle* at last resolved, that there is no way but to saw the knot asunder, and to breake through with Head and Shoulders. This *Muscle* lying wholy under the pectorall *Muscle* (as it is commonly called from its situation) drawes the other into consort, and it may be thought to assist when the Fibres of the first of its three Heads worke alone; for then they raise the Shoulders a little upwards. The *Muscle* also *Deltoides* so called from the figure of the Greeke letter Δ and the Humerall Triangle, (in the midst whereof the Ancients made their *Fontanelles* which are now better made between this and the *Muscle Biceps*) concurres a little to the Significations of this Gesture. For there is a neere relation betweene the *Muscles* of the *Scapula*, the Shoulder, and the Arme or Cubit; and their motions are Cozen-germans, for as the *Scapula* is moved *per se*, and the arme together by accident, and the *Scapula* by accident of the Brachiall *Muscles*, which while they draw the Arme by a certaine kind of Consequution they lead the *Scapula* which is annexed unto it together with it.

it. This *Muſcle* having divers Beginings of different ſituations, one whereof ariſeth from the Anchor formed Proceſſe by reaſon thereof they have divers Fibres. Now when all theſe Heads of the *Muſcles* worke together, the Shoulder is lifted Straight upwards to advance theſe ſignifications of the mind, and the co-heaving of this *Muſcle* may ſeeme as if it ſtrove to bring this active conſultation of the *Muſcles* to an iſſue, as to caſt anchor upon this reſolution, That there is no other Defence or Evaſion but to bend their power to ſubhumerate and beare the burden impoſed upon them through the errours of the Head. At laſt the broadeſt *Muſcle* which with the fellow of its Conjugation covers the whole Backe, having in a manner remain'd as a Neuter in this Action, unleſs the higheſt of its Fibres had faintly aſſented to the propoſitions of the Anollents, begins to declare by a contrary motion; for, this *Muſcle*, from a homely uſe which it ſometimes is put to, being called *Auiſcalptor* or *Auiterſor*, an office we could not perform without it, perceiving it was likely to prove but a foule

foule Businesse, by the action of it more humble Fibres begins to work downwards and draw the Shoulders backe which were advanced forward to joyne in suffrage with the Pectorall Adductor. And but that we know there is no part or Muscle that thinkes its worst employment dishonourable, we might (following the unhappy hint of these Allegories) imagine that this Muscle by some instinct was moved to joyne in the appeale to the Heart, so to prevent the worst of that imployment it might possibly be put unto, having perchance when mens hearts have fail'd them and sunke lower, bin formerly commanded to make good its Nickname, given it by some Barbar Dissector, no Chirurgion, but a Groome of the stoole to Anatomy. Thus have we now upon the best hints we could meet with raised, with much liberty of conceit, unexpected Allegories from the instruments of this Action. But the Name which refers to the significations of the Mind exhibited by that Action, must be given to the Muscle most predominant and demonstratively acting therein; which is the

Muscle

Muſcle commonly call'd the Levator of the Scapula. This Action being one of the firſt I ſet upon to unridle, being thought by ſome that nothing of certainely or probability could be ſaid unto it, and objected to mee as an Action not poſſibly to be made tractable to the ſcope of my Deſigne; At my firſt entrance into this Enquiry I found this Muſcle in Dr. *Rheades* Anatomy of the Muſcles ſtyled the Muſcle of patience, which I confeſſe at firſt ſight I tooke but to intimate the Corporall virtue of a Porter, and not much better than that Patience which the *Spaniards* call *Aſinum onus*; and ſeeing it expoſ'd naked without any gloſſe of interpretation out of his owne conceite nor any other authority, it paſſed with me for a Dull notion and little to my purpoſe; when conſidering the Action wherein this Muſcle ſirnam'd the Lifter was uſually ſeen in thoſe that like not a thing that has happend, for which there is no remedy but Patience, I ſaw it might properly ſtand with the intention of the mind, if it were named *Muſculus Patientiæ* the Muſcle of *Sufferance*, or *Patience*

per

per *force*; and having thus imposed a name upon it answerable to the signification it often helps to exhibite, Behold I soon saw I was imprudently fallen into the error of the Anabaptisticall Nomenclators, for, perusing *Spigelius*, and turning to that place where he describes the Levator of the Scapula, I plainly saw I was forestalled, and that *Spigelius* was before in the Conceit, which prevention by so ingenious an Anatomist pleased me better than if I had so named it first, thinking ever after a little the better of my Fansie, because as they say, good wits jumpe. For thus *Spigelius* to the purpose: This Muscle I am wont by way of sport to call *Musculum Patientiæ*, the Muscle of *Patience*, and he adds his Reason, which is grounded upon the same signification of the Mind exhibited by the gesture caused by the operation of the Muscle. Because when we beare a thing ill, which has happened by chance crosse to our Will, we are wont by the help of this Muscle to raise the Scapula with the Shoudlers, ingeminating the bitter name of Patience. So that it may be Doctor *Rhead* might meane as much as

Spigelius

Spigelius, from whom (or ſome other) he perchance borrowed this name of the Levator, although his ſilence in the Reaſon ſcarce ſignified what he meant thereby. But this Muſcle ſerves to work the Shoulders to many other ſignifications of the Mind; for, they who would ſhew that they have *pity* and *compaſſion* of ones miſery, or are *ignorant* of the *matter they are aſked of*, make uſe of the ſame Muſcle. Niggards alſo in the action of their *illiberality* and *Denial* uſe the ſame Muſcle; the geſture reſulting from thence being made by *Ariſtotle* a Character of their cold property; which expreſſion is ſeen in its pure naturality in Boyes, for when they are loth to part with any thing, they uſe to contract their Shoulders, and reduce them to their Neck and Head, as if they were carried into themſelves, as doubting to be diſſipated and offended in their ſubſtance, if they ſhould be compelled to give any thing away which was in their poſſeſſion; from which moſt Emphatical operation of this Muſcle to the ſignification of the Mind, the Muſcle might be properly called *Muſculus illiber-*

illiberalis, the *Illiberall*, *Negative*, or the *Niggard Muſcle*. So much ſhal ſuffice as to the Denominations of this Muſcle which is principall in the Action, which the Mind enters viſibly in the Head and Shoulders; as for the other Muſcles which are but Acceſſories, they are like to retaine their old names, unleſſe ſome charitable Myotomiſt be pleaſed to take pitty of their private Condition, and think good to beſtow the other ſignifications of this Action as nominall favors ſeverally upon them.

Memb. II.

Of the Muſcles ſerving to the generall expreſſions, or moſt important motions of the Face or Countenance.

MAny are the affections of the Mind that appeare in the ſignificant motions of the Face, even when the Bones are at reſt; for whereas ſome parts of our skin are altogether immoveable and pertinacious in their circumſection over the ſubjacent parts; other parts thereof verſatile indeed, but they

are not actuated with any voluntary motion : the skin of the whole Face participates of motion, which being voluntary, does necessarily imply the use of Muscles, by whose benefit those motions should be orderly and significantly performed. *Galen* was the first who observed that Broad Muscle which he calls πλάτισμα μυῶδες, The broad Mouse-Muscle, and was unknown to the ancient Anatomists, arising from the top of the Sternon and the whole Channell Bone, the upper Spine of the Shoulder-blade, the Spine of the Vertebres of the Neck, and inserted into all the parts of the Head which are without haire, and the lower jaw, beyond which it goes not, according to whose variety of originals and the productions of divers *fibres* it proves the Author of so many voluntary motions as appeare in the Face; for it so ends in the Face, that it covers it within as with a Visard. *Sylvius* makes it a Horsemen Cap or a Riding-Hood, if you take away so much of it as is covered with the Hair. *Theophilus* compares it to a womans Muffler, which the Greekes vulgarly

σαρκοειδὲς, and is nothing elſe but a notable fleſhie Membrane, a medium between a skin and a Muſcle, which encloſeth the Head and Face no leſſe than the Skin, therefore called fleſhie, becauſe beſides the nature of other Membranes, in ſome places it is thicker and degenerates as it were into a Muſcle, as appeares in moſt parts of the Face, where the skin conveyed along with the Membrane, is the cauſe why the skin is there moveable; hence Creatures who have all their skin moveable, for the greateſt part have this Membrane growing to their skin. But although the Ancients thought the whole Face was moved in all its ſignificarions by the operation of this broad Muſcle, yet latter Anatomiſts have found out the Muſcles that lye under it, whoſe opportune ſubjection concurs to the advancement of the ſpeaking motions and voluntary diſpoſures of the Countenance; there being for theſe purpoſes of the Mind, as ſome reckon, forty ſixe, to wit, to the motion of the Eyes and Eye-brows twenty foure, to the motion of the Nose twelve, and to the reſt of the

parts ten. Theſe Muſcles by the effect of their action are beheld in the motion of the Face, while they move the skin together with them, the parts wherein they are inſerted varying according to the variety of the parts. This difference being, as *Galen* ſpeaks, between the skin and the eyes, and lips, that under the skin there is a Muſculous thin Nature, the Eyes are moved by Muſcles, and the Lips by a Nature mixt of a skin and Muſcle: So that the parts of the Face have their ſignificant motions either from the adminiſtration of their proper Muſcles, as the *Forehead*, *Eye-lids*, and *Lips*, or by reaſon of the vicinity of the skin, as the Balls of the *Cheeks* which being deſtitute of Muſcles are moved together with the next skin; ſo that indeed one motion often times follows upon another, by reaſon of the common broad Muſcle out of which the Muſcles that move the parts of the Face are made, there being ſome that are common to two Members, as the of the Noſe and upper Lip, and the and Cheeks, whoſe Muſcles are com to each other. Indeed, the Profe

of Diſſection aſſigne not any action to the skin in generall, becauſe it is a ſimple and ſimilar part, not organicall and inſtrumentall; which muſt be underſtood of common and viſible actions, for private it hath, as nouriſhing it ſelfe by attraction of aliment, though indeed in regard of *Tact* it hath a common action. But in the *Face*, it hath a publique and locall motion that is moſt Emphatically ſignificant, wherein the perturbations of the Mind diſcover themſelves, being moved in the Face by the ſtreight annexion to Muſcles, which are the organs of voluntary motion; for, Nature would have it ſo ordered, that by the benefit of certaine Muſcles working under the skin, and affecting the parts of the Face, (being all of them furniſhed in their originals with Nerves from the third Conjugation of Nerves that come from the Braine) Man with his very Countenance alone, ſhould expreſſe all his Will, Mind, and Deſire, when at any time it happened to be inconvenient or unlawfull to open it in words at length. The reaſon why the Face doth ſo naturally follow the

motions of the Mind, and is an Index of the Affections, is, as *Baldus* thinks, That Affections being Paſſions in matter, and in the Body, they are the forms of a certaine Body, to wit, of the Maſs of Bloud; and inſooth, a certaine paſſion requireth a certaine matter, as Anger Choller, Joy pure Bloud, Sadneſſe Melancholly, Aſtoniſhment Phlegme; which humors conteyned in their Naturall Veſſels and mixt together, furniſh the Affections with matter; which while it remaineth about the Heart and the firſt ſenſitory, from the image perceived and adjudged to have the cauſe or matter of moleſtation or placencie, excited by Heat and Spirits, it is drawn into Act, and is made ſuch in act; from thence the altered Spirits, or vapours with the Spirits are elevated, which by the Arteries coming to the Braine, the Principle of the Nerves, which bring the Commands for motion to the Muſcles into which they are inſerted, ſo making them the Inſtruments of Voluntary motion, pluck and pull it after diverſe manners, according to their qualities Affecting, Contracting, Dilating, Heat-

ing

ing, Refrigerating, more or leſſe drying or moyſtening: And any the leaſt mutation made in a Principle, there followes a change in thoſe things that depend upon that Principle; Wherefore the *Arteries* and *Nerves* that follow the Heart and Braine are changed, and becauſe the Face is nigher the Braine, the chiefe organ of the Senſe, made remarkable by the Cognizanze of the greateſt Arteries, and endued with Nerves, & ſuch varietie of proper and common Muſcles which entertaine them: Hence it comes to paſſe that all changes and paſſions in or with matter, or not exiſting without it, which happen to be done about the Heart, are participated to the Braine, ſo that the Soule may take notice of them and judge them. All theſe working upon the Muſcles of the Face, after ſome manner more or leſſe, alter and vary the Face, and move it from its former ſtate, introducing ſome of their ſigns therein. Yet we allow not the Heart to be the chiefe originall and ſeat of the Affections, which are (indeed) originally from the Head; for although in aſmuch as they concerne the Body, their chiefe ſeat

is in the Heart, becauſe that is chiefly attend by them, yet forasmuch as they affect the mind alſo, it is onely in the Braine, becauſe the mind can immediatly ſuffer from this onely. And hence it followes that the Head and Face doe ſo manifeſtly by ſignes (exhibited by the operation of certaine Muſcles) expreſſe the affections of the mind.

Diſſect. X.

IN profuſe Laughter the motions that appeare in the Face are very remarkable, there being not any particle of the Face that is moveable, but it is moved by common or its particular Muſcles which lye under the skin of the Face, whoſe actions introduce ſo notable a change and alteration in the Countenance, whence it is, that man onely laughes; becauſe he hath a Countenance furniſhed with Muſcles to declare what is ſignified thereby. In other Creatures the Face, or *Muzzell* rather, is dull and heavy, and ſeemes to ſleepe in an unmoveable habit: Not but that other Creatures are ſtirred up after their manner

ner to expreſſe ſome ſignes of exultation and Delight, which ſupply the place of laughter: but becauſe they doe not, as we doe, change the Countenance, they are not ſaid to laugh. Erronious therefore is their Conceit to whom it ſeemes that Laughter is a certaine common retraction of the parts towards the principle of the Soule, wherein that conceived joy doth flouriſh: for they will have them to be contracted and coadunited in that part, wherefore the Muſcles of the Face, Throat & the midriffe is drawn back to the heare, which is abſurd, becauſe the ſame Species almoſt of motion is effected in griefe, which verily ought not to be done, for griefe rather repells, and withall we ſee that the *impetus* is rather done *ab intrinſeco foras*, from the Center to the Circumference. For many times laughter being begun in thoſe inward parts, it is reſtrained, and as it were cut off in the midſt, nor is unfolded or revealed in the Face. So that the motion of laughter begun within in the middle *venter*, the *terminus ad quem* is the extreme part of the Face, where it terminates, becauſe that part is the

emunctuary of the ſenſes, by which our mind doth both receive in and utter the affections, ſince by that part it doth perceive, and in that part the Senſories are inſtructed; wherefore to it the whole ſenſe, and more over our whole mind doth conſpire. Hence therefore proceedes the Equable Emiſſion and intenſion of Senſe in the Face, as it were extant and coming forth. Hence the Aire is breath'd out thick and ſhort. Hence the Midriffe is contracted and the Muſcles of the face, becauſe the equable Emiſſion with the alacrity of Senſe reaching up to the Sence of the Face, cannot be done without the retraction of thoſe Muſcles. In this Dance of the Muſcles performed by exceſſive Laughter upon the Theater of mirth, the Countenance, the Mouth ſeemes to lead the Chorus; For, Laughter is a motion ariſing chiefly out of the Contraction of the Muſcles of the *Lips*, in which motion of the *Mouth*, called Laughter, the parts about the *Mouth* ſeem bounded out with certaine lines called *Rictus*, whence *Riſus*. And this contraction of the Muſcles of the *Lips*, is occaſion'd by reaſon of the

the conſent they have with the Nerves of the Braine drawn back to their originall; and with the *Dipbragma*, the grand Muſcle of this and all other paſſions which is altogether almoſt *nervous* and *muſculous*. And becauſe the *Lips* are Muſcles of themſelves in reſpect of their inſtrumentall relation to ſpeech, their engagement in this paſſion renders them unſerviceable for the framing of words; for, the formes & matter of words both are then intercepted; the firſt by the ſtreighning of the *Gorge* & *Lips*, which will not admit of any articulation eſpecially labiall: & the latter by the Interjections breaking off the voyce at the Larinx. Hence it is we heare men ſay they could not ſpeake for laughing; nor indeede can we eate in the violence of this paſſion, the impediment proceeding from this Diduction of the *Lips* which were given us to eate and drinke withall; yet the *Mouth* is more ſhut than open, that is it is Dehiſcent, yet ſcarce Dehiſcent into a Caſme, yet the *Lips* are ſo diſtended and contracted that they diſcover the *Teeth*. The *Lower-Law* after a manner inclines inward. And as about the

Noſtrills

Noſtrills and the Region of the Chin, or forepart of the Jawes, a Cereaine concaue of a circular line encompaſſeth the contracted and *wrinkled Cheekes*: So the conuexity thereof boundeth out the hinder part of both the Jawes on both ſides, where a certaine hillock lifts up it ſelfe; which figure of the *mouth* and cheekes, together with the wrinkles which appeare in the Face of him that laughes, is called *Gelaſinus*. The *Noſtrils* are openery, crooked, hooked, wrinkled and crispes, eſpecially in *Deriſion*. The *Eyelids* in a mediocrity ſhut. The *Eye* is ſomewhat recondit betweene its Orbite, which a certaine corrugation about its outward angle. The *Eares* indeed are generally conceiued to be immoueable in man alone, which yet are moued in ſome, and appeare to ſtake and to be moued; but this motion is not of the Auricles alone *per ſe*, but becauſe they ſomewhat adhere and are conjoyn'd to the Jaw or lower Mandible, which is chiefly by its appointed Muſcles moued in laughter: yet in ſuch as haue a faculty as ſome haue in their Eares, as hauing the auricular muſcles bigger than ordinary, this motion may be more e-

vident. The *forehead* seemes exporrect and unfolded, And all these *Muscles* on the right side are more active, whence the motions on that side are most notable and apparent; insomuch as the Mouth and the Face it selfe is depraved and distorted, especially in Derision. But this *genuine* figure of true laughter is somewhat various, according to the various Constitution of the substance of particular persons, in the parts of their face; that as to the individualls, it is almost unutterable, for you shall see in some, in the Chin and in the Cheekes certaine concavities then caused like those in the Hands and other members; in some a pleasant pit or Dimple which is called the Navell of *Venus*, and the Muscle commonly called *Buccinator* in which it appeares, might be thence called *Musculus Gelasini*, or *umbilici Veneris*, the pleasant Muscle of Loves pretty Dimple; this in some is a *rift*, in others a wrinkle; which are occasioned in these parts of the face of those that laugh, because in some perchance the parts of their Face by reason of their unequall contexture or constitution, are not equally

qually contracted, nor ſwell, for in laughter the Face ſwells: for, the whole Countenance is powred out and ſpread with the Spirits that then ſwell the Muſcles, there being a great concourſe of Spirits and bloud unto the Face, which bear a reat ſtroke in the Action: So that the Muſcles of the Face are filled with Spirits after the ſame manner as a certaine member directy oppoſite unto it which importunately ſometimes lookes us in the Face, which being filled with Spirits growes ſtiff and is extended, yet although the analogy be very faire, there is no contraction in that part, but onely a great extenſion and that according to all its *Dimenſions*, which happens by reaſon of the Spungy and very looſe fleſh which is not ſo much in the Face; and withall that Part is very free and at liberty: whereas the Muſcles of the Face on both ſides and every where adhere moſt firmely to the bone and skin, that when they cannot be extended every way according to all their Dimenſions, there are contracted. Now this *figure* that compriſeth the alterations of every part in the *face* follows as

as an effect and conſequence of the mov-
ings of the Muſcles that are proper to
the parts, or which being Common
have by their conformation a Sympa-
theticall dependency one upon another.
But this is not all: for, that which is
moſt remarkable and worthy obſervati-
on is, that this moving of the parts of
the *Face* although very great, is done &
undone on a ſudden, and almoſt in a
moment; that is, a mans Face forthwith
falls into the poſture of laughing, and
while in that poſture he laughes, he in-
continently leaves off the motion; which
as it ſuddenly comes, ſo it goes; when
a man ceaſeth from laughter although
it be at the higheſt pitch and ſcrued up
to the very Ecla of mirth, it vaniſheth a-
way, and needes no time of interpoſiti-
on to abate by degrees, to take out the
tracts of the operations of ſo many and
divers engaged Muſcles, which incon-
tinently ceaſe from their labour, for as
ſoone as the Conceite and jeſt is at an
end, the laughter being naturall, the
mouth and parts of the face returne to
their former ſituation, the motion be-
ing now over; of which ſudden begin-
in g

ing and ending of ſo many concurring motions the Cauſe may be ſuppoſed, the ſubtiltie of the Spirits in their motion, when they aſcend to the face: But what kind of moving of the Muſcle this ſhould be is ſomewhat difficult to conjecture, although it is ſo manifeſt and evident in appearance. 'Tis true, we can conjecture a Muſcle to move or to be moved, for we know a Muſcle hath moved its appointed moveable, when contracted, it appears ſhorter and harder, eſpecially if it have a bone under it, as all the Muſcles of the Face have. But here all the parts of the Face, except that perchance of the Forehead, ſeeme to be contracted together; and the whole face, according to the confuſion of its ſubſtance, to grow ſtiff and hard: wherefore, it ſeemes moſt probable, that all the Muſcles of the face are moved together at once, yet the controverſie is ſomewhat intricate, & they that are for the Negative alleg, that the ſame thing cannot be moved by contrary motions at the ſame time, as for example; Some Muſcles move the *Lower-Lip downwards*, and ſo open

the

the mouth; others by moving the *Jaw upwards* cloſe it; others move it outwards, others inward; others draw it to one ſide and drive it round; wherefore all of them ſeeme not to Move at once. To which its anſwer'd, that things moving in *Contraria*, in the ſame moveable, if they be of equall virtue, they either doe nothing, or if they doe, the moveable is diſtracted: but if they be of unequall power and ſtrength, the weaker gives way to the motion of the ſtronger; yet the prevailing Mover in the conflict or contention obtaines not the ſame vigour, or as much as if it had not contended at all and had moved without oppoſition; for if all Materiall Agents (as the learned know) in Doing Suffer alſo, and after ſome manner abate of the Degree of their virtue; how much more will it happen when one hath an adverſary, although weaker, yet openly, endeavouring againſt him? Wherfore it may be ſuppos'd it doth not moveſo perfectly as it would, if it were not hinder'd by its Adverſary. The way to diſcover the manner of moving in this Conglobation of Muſcles

in

in laughter is, to conſider what Muscles of parts of the Face are *effectivè* more or fewer, thicker or ſmaller; for, many moving together are not ſtronger than fewer if they be all equally qualified, and the great and thick are ſtronger than the ſmall and ſlender, as may be made manifeſt by ſpeciall example.

As firſt, the Muſcles that move the *lower-Jaw* drawing it upwards to cloſe the Mouth, are more and thick, and therefore ſtronger than thoſe that lead it downwards to open the Mouth; as is well known out of the Anatomy of thoſe Muſcles. Now, becauſe in Laughter the Mouth is neither too much cloſed, nor yet gapes; the Muſcles that ſerve to *ſhut* and *open* the *Mouth* are moved together; the *Mouth* not being exactly ſhut, although the Muſcles are more intenſe which are appointed to ſhut it; but withall is ſomewhat opened, by reaſon of the repugnancy of the opening Muſcles. Hence it is that in over Laughter our *Iawes* ake, ſo that they ſeeme to ſuffer a luxation, by reaſon of the contrariety of moving and violent Conflict; for, the Ligament,

Nerve

Nerves and Fibres are after a manner diſtracted and drawn into factions. And we may obſerve that the *Maſticatory Muſcles*, (which are better called Lateral from their uſe) whoſe fibres by reaſon of their Divers Heads, which reſpecting one another after a divers manner are inſerted acroſſe in manner of the Letter X, do manifeſt their operation in this motion, for by reaſon of their Fibres, although they move to the Right hand and to the Left, notwithſtanding they can withall not a little move the *lower-Jaw* either outward and inward. The Muſcle called *Abducens Pterigoideum*, which puts the Chin out forward, with the other *Manſorie* alſo which leads the Chin inwards, and when it is produced recalls it back, theſe by reaſon of the contrarietie of their movings which are done at the ſame time in Laughter, are very remarkable: Of whoſe Contraction we may make an experiment, becauſe the *Manſorie Muſcles* being chiefly ſeated about the Cheekes, do then appeare Contracted and ſomewhat hard, the Chin being perchance ſomewhat drawn in,

in, becauſe the Muſcles are more valid which move the *Iawes* inward; which perchance may not ſo exactly appear alike in all men, but may differ according to the divers Condition, Compoſition, or Commenſion of their parts. The Contraction of the Temporall Muſcle which is but ſmall in Men, is little obſerved; nor that of the *double-bellied Depriment* which works contrary to the other, for they are ſmall and thin, their employment being eaſie, becauſe the *Iaw* with its own weight tends downward and hath no need of any ſtrong Retractor, but as a heavy thing, is is drawn down with a little adoe, to open the Mouth.

In the motions of the *Lips* the contrariety is not very much perſpicuous, for they are exerciſed in two moveable Lips; wherefore their Muſcles contracted together, they are Contracted, to wit, the *upper Lip* upward, the *lower Lip* downwards; whereupon the Teeth are diſcovered; whence ſome derive *Rides a Radio*. But that we ſee the *upper Lip* more contracted than the *lower*, it hath that property from the more valid

valid Muſcles which it hath obteined; for although the Muſcles of the *lower Lip* are broader than thoſe of the *upper*, yet being ſhorter they gaine no advantage by their Breadth; for, the *Length* of a Cord gives more advantage in Drawing than the Breadth. And that the *Lips* alſo in Laughter are moved neither inward nor outward, (which motions, and thoſe indeed contrary every one of them hath, happening by the advantage of certaine fibres belonging to their Muſcles) the cauſe is, that they being weaker than the Muſcles themſelves, moving the *upper Lip* upwards, and the *lower* downwards, by good right giveway to their motions, neither are they able according to their uſuall operation to move the *Lips* inward or outward, eſpecially ſince they are ſtrongly drawn in on both ſides, and extended by the Contraction of the Cheekes, to which on both Hands they are annexed.

The Muſcles which *draw out and open the Noſtrils*, excell ſo in ſtrength the *conſtringent paire*, which are ſomewhat ſmall; that the adverſe moving

ing in the Noſe is not ſo perceptible to ſenſe; therefore in Laughter they are ſtrongly Contracted, inſomuch as the Noſtrills are opened, and eſpecially in Deriſion are wrinkled; and theſe Muſcles ſo raiſe up and Contract the *Noſtrils*, that the Noſe ſeemes crooked and hooked, and by that means alſo the *Noſtrils* become acute.

We may obſerve concerning the *Eye-lids* which are two over each Eye, an *upper*, and a *lower Lid*, that the *upper Lid* only, according to *Galen*, is moved upward and downward by the office of divers Muſcles having contrary motions; So that by this Rule and Method, that teacheth all the Muſcles in the Face to be moved together at once in Laughter, We ſhould not affirme the *Eye-lids* to be then moved, if the aforeſaid Muſcles of the Eye-lids were of equall ſtrength: But ſince (as it appreares by the effect) the Muſcle that draws it down is ſtronger, to which the weight alſo of the Lid it ſelfe doth adde ſome advantage, it comes to paſſe that the Eye-lid is a little then moved downward, and the Eye a little cloſed. And

although

although *Ariſtotle* who was not adviſed of Muſcles (much leſſe of the Muſcle which late Anatomiſts have found for that motion) truely affirmes the *lower-lid* to be alſo moved in man: yet that motion is but ſmall and little better then nothing; and that which is as it were nothing, is to be thought in a manner to be abſent. Whatſoever is to bee obſerv'd of this matter from late *Anatomiſts*, this is enough for this purpoſe, that the *upper-Eylid* hath obteined two contrary motions, and therefore can neither ſhut nor open the Eye overmuch in laughter, although it ſhuts it more; and it is obſervable that by reaſon of this contrariety of moving of the *upper-Eyelid*, that in laughter there is made, by reaſon of the Contranixion, a certaine corrugation or wrinkle about the angle of the Eye, eſpecially the outward angle, which in thoſe that laugh often, are ſuppoſed to grow habituall: which ſome Ladyes fearing, will not laugh, leſt they ſhould contract wrinkles and looke old by breaking in that part which is neere the Temples, whoſe *Latine Etimologie* they much abhor. Hence of ſome who

who have but a kind of pinke eye we u
to ſay, they laughed that they had n
ver an eye to ſee. And becauſe the E
is more ſhut than open'd in laughter,
comes to paſſe that both the *Eye-brow*
are drawn a litle downward, and th
ſomewhat, yet lightly incline; bo
the *Eye-browes* together, eſpecially
exceſſive laughter, being neceſſarily m
ved: whereas otherwiſe at pleaſure w
can move one of them alone, as i
nication.

The *Eyes* in proſuſe laughter ſeem
to be retracted or drawn back, and n
a little to be hid within their Orbit
But to conclude this to be done by t
Muſcles, is to ſpeake to more than t
cauſes appearing to Senſe. It is thoug
the *Optique Nerves* may be retracted
well as other Nerves, and why not
Which may be by the ſeventh Muſc
placed about it, which with it fibres
hath obtein'd, being ſtraight, may,
is likely, draw the eye back alſo. B
whether the other Muſcles of the eye
contracted or no thats a queſtion. Wh
not? but there is no confident pro
nouncing this for a certainty, becau
the

they appeare not to Senſe; but if they be contracted, it is moſt probable that they are all contracted together in this laughter, as the other Muſcles of the Face are; and by reaſon of that contrariety of movings that they have, and perchance equality of ſtrength, the eyes ſeeme rather to reſt than to be moved, as any man may make experiment in himſelfe, and may apprehend that while he laughes, his eyes can difficultly be moved to looke round with a diſtinct viſion, which is done at the perpendicular Ray, unleſſe he endeavour it by the inordinate motion of his whole Head and Body; which circumſpection the Head, nor whole Body can Scarſe then obteine. But the Author of this experiment will not endure to be asked whether the Muſcles may be then moved, abhorring to be put to ſo difficult a point of Divination. Surely the queſtion may be reſolv'd according to the received Philoſophy of Arbitrary motion; for if he will admit the Muſcles of the *Eye* to be all moved at once & together, the motion is *Tonique*; wherein although the Muſcles ſeeme to

be at reſt, yet as *Galen* ſayes, they doe, *quiete agere*, act in reſt; *Tonique* motion being an action with immobility.

In this exceſſive laughter, the *Forehead* (by which we muſt underſtand the Muſculous skin thereof) hath a peculiar property of it ſelfe, and a privilege from the univerſall contraction of the other parts: for, the *Front* (which is a thing has bin but little obſerv'd) is neither moved upwards nor downwards nor knit, although it be very propenſe and proportionall to ſignify many paſſions by thoſe motions; but it remaines as it were in its naturall ſtate, yet ſmoothly expanded and ſtretched out inſenſibly; which motion of expanſion is to be refer'd to the Muſcles it hath received, or to its fibres; which (as we may believe) are equivalent; whereby when in laughter by the ſame reaſon as other Muſcles they are moved together, it comes to paſſe that the *Forehead* then doth rather remaine immoveable, and the motion proves *Tonique* or ſtreined out; unleſſe perchance it may be moved a little downward for explication, by reaſon of the ſome

ſomewhat more prevalent fibres.

The whole *Countenance* is poured out and ſpread with the Spirits that ſwell the Muſcles; there being a great concourſe of Spirits and blood unto the *Face*, which beare a great ſtroake in this action.

Now this broad and high laughter is the meaſure and rule of the eſſence of other, and by its defect, the others may be meaſured and pondered; for, in low laughter, although the motions of the *Face* are even then very remarkable and great, yet they are more remiſſe, in moderat laughter they are more intenſe; for, theſe motions of the Muſcles have indicible and diſtinct degrees, or an utterable latitude of conſideration, there being no Muſcle or part in the whole Body, that is out of action if a man laugh but a little: for, although laughter be more eſpecially a motion of all the Muſcles of the *Face* at one time and together; yet it is withall a motion common to moſt of the parts of the body. This Dance of the Muſcles being like that which is called the *Cuſhion* dance or *Joane Sanderſon*, which brings in

all that have ability of motion; for, the whole Head is moved, now caſt backward, and by and by inclined to the Right or Left Shoulder; becauſe the Muſcles that move the Head and Neck ariſe partly out of the Breaſt-bone and the Channell Bones, and partly alſo out of the joynts of the Breaſt; wherefore it neceſſarily followes that in violent laughter, and the agitation of the *Diaphragma* and pectorall Muſcles, the Head ſhould alſo together be moved. The whole *Neck* is contracted and made a little ſhorter; this you may either call the motion of the Head drawn down by its contracted Muſcles: or the working of the Levator of the Scapula which cauſes that ſhugging of the Shoulders ſo emphaticall in fat-folkes; but what it is, is not very apparent or worthy of ſo great obſervation, and ſeemes to accompany the inordinate motions of the whole Head. The *Throate* ſeemes not a little to tremble, by reaſon of the Breaſt being much, ſuddenly, and often moved: for, the Rough Artery being placed in the internall Region thereof, the great and often reſpiration ſhakes

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the Throate. For ſince the Midriff is therefore contracted taking this motion from the dilatation of the Heart, and to beare up againſt the moving of the Senſe and Spirit, leſt it ſhould to the great endangering of life be emptied and vaniſh away: or becauſe it behov'd theſe parts ſo to endeavour for the ſtrength of the motion to bee made which is at hand. Hence alſo the Muſcles of the whole Throat and Face endeavour together with them, for they ſo conſent with the Muſcles of the *Larynx*, that unleſſe they bee together drawn in, the other can no way be contracted. But what manner of motions theſe and the reſt which follow downe to the feete ſhould be, is hard to ſay, or from what denomination to define them: for, we cannot according to *Ariſtotle*, *a termino ad quem*; for, theſe motions of the whole Head & Body ſeeme, *Carere termino certo*, and cannot be deſcrib'd but after that manner as men are ſhooke together, are geſtient, tremble, or cannot abide in a place, but leap, ſtart out, ly downe, and ſeeme wholy diſſolv'd and impotent. And becauſe

there are so many movings of Muscles, and those indeed contrary, those tensions and contractions, if they continue and are daily used, are very hurtfull; for, the Muscles of the *Face* being fill'd with subtile vapours causing them to streine for the avoidance (as in Skreaking the Muscles are contracted to avoid a vapourous excrement,) the Spirits are thereby much evapourated and spent. As for the rest of the motions let *Democritus* looke to it. Upon this manifest sight of the motion of the Breast (wherein the Midriffe is moved, and the Lungs, even up to the Muscles which move the Cheeks, the various movings (from whence some infer as manifold differences of laughter) and because Respiration, which is a moving of the breathing parts is as it were the matter of laughter out of which it is produced, whence comes that succussation of the Lungs and agitation of the Midriff) no man e're doubted that laughter was a motion, and to be refer'd to the *motive virtue*. But upon what principle this motion should depend, since it is done before we are

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well aware of it, and besides our will, whereas a motion that depends upon Appetite, is *Spontaneous*, as laughter is concluded to be, and that Faculty being Animall is no way proper to man; That hath bin somewhat doubted of, upon which occasion some have unnecessarily multiplyed many Entities. But They state the case best who say, that laughter is an operation proceeding from an effect of the Intellective virtue which in the first place is the cause of it, and the chiefe roote, for in all laughter the Intellect is as the first Radix after a manner sustaining the perturbation and dilation of the sense; but the motive power is that by whose commendation it is last of all perfected. We may not therefore when we see men Laughing to be affected with a certaine moving of the Lungs, the Midriff and the Muscles moving the Cheekes, thinke men laugh, when according to their arbitriment or any otherwise they accommodate themselves to the motions of these parts: Or when we see a more remisse laughter out of the moving alone of those Muscles, and a little retraction of the

Midriffe without the manifeſt act of Gurgulation, we ſhould therefore beleeve either that Laughter of it ſelf is ſuch a motion, or that this, at leaſt for the greateſt part, is its Nature, ſince all theſe may be counterfeited, and may be rather an Image of Laughter; therefore there muſt ſomewhat precede in the Soule, and the firſt Senſitive, that Laughter may be abſolute and accompliſhed in all its numbers. And indeed, that manifeſt motion doth preſuppoſe a certaine affection of the firſt Senſitive and Rationall part of the Soule, ſo that perfect Laughter is not only that manifeſt motion, nor that inchoat motion as they ſpeake in the firſt Senſitive and its Spirits; for, this is often done, and yet Laughter is ſuppreſſed, that it truly ſeemes to be done by halves, and intercepted as it were in the midſt. But true Laughter hath both the effects of the intellectuall part as the Principle upon which the dilation of the Heart and contraction of the Countenance enſue, it being not only an affection of the Body, but *totius conjuncti*, of the whole Man.

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So that it is manifeſt that Laughter is a certaine vibration of the *Midriffe*, and of the Muſcles of the *Mouth*, and the whole *Face*, &c. And that when we laugh the motion of our Face aimes at ſome end, that is, to ſignifie ſome motion of the Mind, and followeth upon the Connexion of thoſe Muſcles that draw the Face in ſuch a ſort to ſome inward parts that are moved by the paſſion out of which Laughter proceedeth; the *Genus* whereof occupying the place of the *Forme* is *Motus*; the *matter* or Subject are all the parts of the *Face*, eſpecially the Muſcles together; the *finall* Cauſe is to bring forth Laughter, (which by a kind of magneticall virtue it doth even in another.) But Laughter being no affection, but an outward act proceeding from ſome inward motion of the Mind; the queſtion is what affection of the Mind this Jubilee and vibrations of ſo many Muſcles ſhould ſignifie? *Fracoſtorius* judgeth Laughter to be a ſign of two Paſſions, Joy, and Admiration. *Valeriola* and *Laurentinus* take away Admiration, ſuppoſing that profuſe Laughter is the iſſue only of

Joy. *Vallesius* states the Controversie. The opinion of *Fracostorius* (whatever *Barbolivus* and others object to the contrary) seemes to me most probable, that it is a compounded motion, because in Laughter there are certain contranitencies; for, Admiration makes a kind of *suspension* in the Head, and Joy a kind of *expansion* in the Heart. (Yet both motions are so sudden that they are done together,) whereby it comes to passe that when Laughter is produced, it is not done without some molestation. And that which seems to confirme this opinion is, that those are most apt to Laughter who are easily drawn to admire, as Children, Women, and the Common-people; whereas Grave men, and Philosophers are less prone to Laughter. Another thing that seemes to confirme this opinion is, a new thought of my own, that the suspension of the *Eye*, and expansion of the *Forehead* seeme to be Symbolick effects of this mixt Passion. But here is the grand Quære, how Joy that is a motion and passion of the Heart, should move the Muscles? for how so many

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Muſcles that are the Inſtruments of the Animal Faculty ſhould be moved by a paſſion of the Heart is worth the ſcanning. For, you would verily think that the Heart were a Muſcle, and the grand Principle that ſet all the other Muſcles in Motion, whereas it is known well enough that the Heart is neither a Muſcle, nor of it ſelf can move the Muſcles, for, that moves only the Arteries: yet though Joy be a paſſion of the Heart, Laughter indeed, which proceeds not only from Joy but Admiration, is a paſſion of the Rationable part, (for otherwiſe Beaſts might laugh;) no wonder therefore that the Inſtruments of the Animal Faculty are moved to diſcover and bring forth the *Admiration* conjoyned with *Joy*; nor is it a marvell that *Joy* ſhould be expreſſed by an Animal motion, the Heart not moving the Muſcles, but the Animal Faculty conſenting with the Vitall. So that hereby it is made manifeſt, that naturall Laughter is a free motion, becauſe it is Animal; yet it can hardly be held in ſometimes, becauſe although it be Animal, yet it is in the number of them that

that ſerve the Naturall. And this is the reaſon why Laughter is originally from the *Head* and not from the *Heart*, that notion, intelligence, or imagination, which are functions of the Mind, and accounted among thoſe faculties that reſide in the Braine, are brought forth by the Soule; for, who ever (unleſs a Paraſite) laughed before he knew wherefore he laughed? So that *Hippocrates Lib. de morbo Sacro*, with very good reaſon deduceth Laughter from the *Head*, as having its originall from thence; for that the firſt motions begin there, and from thence are communicated to all the ſubject parts, drawing the whole Body into Conſort, and with its univerſall moving and agitation declares the Sympathy it has with the Mind and the Braine: as if the Mind ſitting enthroned in a high Tower, denounceth ſo to her Subjects to prepare themſelves for Laughter, for there is ſomething, which they knew not of which yet ſhe only ſaw and knew to be worthy of Laughter: upon this admonition preſently the inferiour principall parts Contiguous and Connatives to the

their High Prince beſtirring themſelves, do ſollicite the other lower parts alſo ſubject unto them. And firſt the Braine commands the Nerves, theſe ſtir up the Muſcles, and they agitate the parts annexed unto them; untill the whole Body, as it were to gratifie the Mind as a King, ſignifies its conceived Joy in all the waies and officious demonſtration of triumphant geſture it poſſibly can; and as every part is nigher to its Principle, ſo much the ſooner and vehemently it is moved. And although, to ſpeak according to the modeſty of *Cæſars* Speech in *Tully*, we are ignorant how Laughter exiſts, where it is, and from what place it ſo ſuddenly breaks out into the Countenance: yet the manner and order of the generation of Laughter may be ſuppoſed to be after this manner. When ſome pleaſant queint novel and conceited object offers it ſelf to the Senſes, there is an impreſſion thereof made in the Braine, the Object thus come into the Braine, the Mind is filled with *Joy*, this by the firſt branch of thoſe Nerves of the ſixt Conjugation which goeth into the Heart is carry-

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ed unto the Heart, with which the Heart affected, impatient of delay, dilates it self; the Heart impetuously moved, the Cawle thereof by consequence is carried from one part unto the other and contracted; and because the Cawle is fastened to the Mediastenum and Diaphragma, therefore is a necessity also that the very Diaphragma should be violently moved, agitated, and heated by the diffusion of Blood and Spirits that are then encreased about that part. The passion or motion by the object thus raised in the Heart (such is the consent between the Heart and Braine) is by the other branches of the Nerves of the sixt Conjugation called *Nervi phrenici*, which bring the motive Spirits from the Braine into the Diaphragma, and by virtue whereof it is very sensible, carried back to the Braine: So that the change of motion in the Heart caused by this Passion, and imprinted, ecchoed, and expressed in the Diaphragma, and thence conveyed unto the Braine, is as the Ground; and the motion commanded the Muscles by the Braine, is as the voluntary Descant upon it. Concerning the

the chiefe *corporall Principle*, and *materiall Inſtrument* wherewith *Laughter* is performed, the Learned differ in their judgments. *Democritus* thought that that firſt part and *chiefe Principle* was the *Spleene*, and that the other parts were but as Inſtruments afterwards ſubſervient to the perfect finiſhing of the work. Which opinion to others hath juſtly ſeemed abſurd, becauſe Laughter is performed by the miniſteriall aſſiſtance of certaine motion, but the Spleene is beheld neither to be moved, nor to be the Principle of any kind of moving, yet we ſee thoſe parts to be moved which are in the Breaſt and middle venter; beſides, it is not accounted the prime ſeat of any faculty of the Soule, much leſſe of the Cognoſcent or Animal; therefore it cannot be the prime Principle of Laughter. Others have beleeved the prime Part by which Laughter is begotten, to be the Diaphragma, for that is a certaine Muſcle ſomewhat broad, placed neere the Mind, excelling in alacrity of Senſe, agile to motions, of it ſelf, in the firſt place ſubordinate to Reſpiration, being of ſuch

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and of so great importance to the functions of the Soule, that the *Antients* by one common consent named it φρὴν, *quasi mentem vel mentis sedem*, and they thought that Phrensies and Delirations arose from thence: Therefore it is no marvell if Laughter also should be first wrought by this part, since it is swift and expedite to swift motions, being a broad Muscle and most plentifully abounding with Sense and Spirit, which is equally dilated through it: (for, Laughter is accounted to be as a certaine Dilation,) and is withall the prime Instrument of *Spiration*, which appeares to be in a manner the *substance* of *Laughter*, which *Aristotle* affirmes, where he saith, that for this cause the tickling one under the Armes causeth this affection, because the Midriffe is fastened in that part, whereby it easily opens and moves the Sense of this Muscle beside our Will; which (indeed) is somewhat apparent to Sense; for, in any the least Laughter the Midriffe is manifestly removed and retracted, and the beginning of motion being made there, the other parts, as the Lungs, and Muscles of the

Face

Face are forthwith ſtirred and moved. But becauſe the Midriffe is in no manner a principall part of the body, nor the chiefe ſeat of the Soule, or of any faculty; therefore neither doth it ſeeme Conſentaneous it ſhould be accounted the prime Principle of Laughing; wherefore for ſome reaſons the Body of the Heart hath been by ſome adjudged the prime ſeat and original of Laughter. But Phyſicians who upon the beſt ground make the Braine to be *primum Senſitivum*, affirme the Braine to be the *Prime Principle* of *Laughing*; but this affection to be made common by conſent to the Diaphragma, and that it therefore is the *prime Inſtrument*, becauſe it begins to be formed, and to appeare by this part, the other parts thereupon adminiſtring to the operation, wherein it is neceſſary to uſe a Diſtinction for the better clearing of the Point, for it is one thing to be the *prime* and *neereſt Principle*, and another thing to be the *prime manifeſtative Inſtrument*, *and perfective of the Forme*; the Braine is acknowledged the *prime and neareſt Principle*, but the Midriffe is the *prime manifeſtative*

nifestative Instrument, and *perfective* [illegible] *the Forme*. Now the Diapragma wh[illegible] operation is so evidently seen in [illegible] *Face*, its motion in this passion bei[illegible] attended with so many motions of [illegible] *Face* and Body, is a Muscle the most [illegible] nowned and famous as the spring of [illegible] the orall motions; whose honour[illegible] names sufficiently prove its Excellen[illegible] having obteined a figure peculiar [illegible] common to no other Muscle; bei[illegible] broad, thin, and orbicular, and having [illegible] beginning in its midst, from whe[illegible] thick fibres run out as from the Cen[illegible] to the Circumference: for it hath a ki[illegible] of nervous Circle in the middle, whi[illegible] is its originall, about which anot[illegible] wholy fleshie consists, by which the [illegible] bres that go out of it are dispersed [illegible] spread out to the Phripheria. The [illegible] proper and Emphaticall name it h[illegible] obteyned with the Greekes is φρενός, [illegible] the word φρονεῖν, that in Latine signi[illegible] *sapere*, which with us is to savour or [illegible] like, for with this part we have a liki[illegible] of any object, or a motion of incli[illegible] tion unto it, to which we are behol[illegible] ing (as *Plinie* saies) for all our me[illegible]

conce[illegible]

conceits and fine flaſhes. This muſcu-
ous Membrane being as it were the
Timbrell of the Fantſie and the Heart,
which beaten upon by them, the Muſcles
of the *Face* and Body are put into mo-
tion, and dance unto the Dorian melo-
dy thereof a kind of *Moriske* expreſſed
in the exultant action of the parts into
which they are inſerted, deſerves to be
called *Muſculus hilaritatis ſeu facetiarum*,
the *Muſcle of Joy, Mirth, and Laughter*, or
of *witty conceit*, or the *Muſcle of the*
motion of inclination.

Anger, Indignation, and *Envy* affect the
Muſcles of the *Face*, with a kind of
Laughter, improperly enough called
Sardonian; which being according to
Nature, is conteined in the other Laugh-
ter, yet there is ſome difference, neither
do all things which accompany the
other naturall Laughter appeare exactly
in this, there may be perchance the ſame
motion of the parts, and almoſt the
ſame *Figure* of the *Face*, but no Sign of
Joy or Mirth, but almoſt alwaies ſad-
neſſe; for the front is cloudy and con-
tracted, and indeed, the Lips only and
Teeth are affected, in which adulterate

Laughter

Laughter men doe *Labijs tantum, & a*
enis malis ridere, or *ringere* rather th
ridere,

Feare also, and a *Sudden fright*
Spectrum, especially if it bee horri
ridiculous, hath the same effect so
times upon the Muscles of the *Fa*
there being certaine effects that doe
turally breake out into contraries,
sinuating not themselves into the Bo
corporally, as they say and *subjectiv*
but immaterially and *objectivè* inv
our senses, for, the Spirits or Radic
moisture by which we know on a s
den, perceiving some sad object
spectre and evill, doth perchance fe
and flying back betakes it selfe in
manner wholly to its intimate To
or Fort, therefore it contracts the m
bers, and especially the Muscles of t
Face, as the part by which the Spectr
breakes in most upon our minds a
Spirits.

Weeping is a motion contrary
signification to laughter, represent
also some motion of the mind, that
by Laughter the heart is Dilated a
with it the Breast and the Muscles
th

Face: So by this they are conſtring-
. But in the *Face* by Laughter the parts
out the *mouth* are more emphatically
fected: but in weeping the parts about
e Eye; which compreſſion expreſſeth
ares, elſe there is little difference in
ir lines, as Painters obſerve, which
nſequently requires the action of the
me Muſcles in both, which is not by
y influence of the lively Spirit which
Laughter repleniſheth the counte-
nce, cauſing the eyes to ſparkle, and
lls the Muſcles of the Cheekes with a
ble vapour: But the contraction of
e Cheekes in weeping, ſeemeth to a-
ſe from an excrementitious vapour
hich paſſeth with the humiditie of
ares from the Braine into the Cheeks;
d forceth Nature to make contracti-
n to diſchardge it ſelfe of that vapour,
yned with the conſent, which is be-
ixt the Muſcles of the *Jawes* and lips
ith the Midriffe, whoſe remiſſion and
ntraction being haſtned by the con-
action of the Heart in griefe, con-
acteth alſo the aforeſaid *Lips* and
eekes, which it cauſeth by the fourth
nd ſixt paire of Nerves derived into
both

both parts from the marrow of the Chine-bone, in the Neck. Theſe are alſo the cauſe of the whole deformity of the *Face* in griefe, which chiefly contracteth the viſage in expiration, in which the heart hath more power over the Midriffe being ſlacken'd, than in inſpiration, wherin by dilating of the Cheſt for uſe of breath, it is extended.

Memb. III.

Of the Muſcles appertaining to the Fore-Head, or the Browes and Eye-browes, and employed by the mind in the ſignificant motions thereof.

THE skin of the *Forehead* is ſignificantly moved according to the pleaſure of our will and that in the opinion of the Ancients from a Muſculous and thin ſubſtance united to the skin of the Forehead; for, becauſe it could not be that any part ſhould be moved voluntarily in any important motion without a muſcle, our wiſe Creator foreſeeing that, he ſpread under it a certaine thin Muſculous ſubſtance; for, the Bulke

and

d proportion of Muſcles is ordered
cording as the greatneſſe of the part
be moved did require. And in this
ace the skin onely is united to a Muſ-
lous ſubſtance, which although ſo
ited, yet it is ſo free from the ſub-
ted bones, that it may be moved; the
in being the ſuperficiall part of the
bject ſubſtance which is Muſculous
adhering together and growne to,
at their motion is both one. This
in of the Forehead, which moved by
e Muſculous fleſh that covers the bone
reof, and by its tenſion and corru-
tion demonſtrates divers affections
the mind, is not onely moved by the
neſit of a fleſhy membrane (which
ing under the connate fleſh goes into
Muſculous ſubſtance, endowed with
right fibres:) But with two Muſcles,
hich the *courſe* of the fibres, and mov-
which appeares in this as in other
uſcles, (which are not found in a
eſhy membrane) doe make manifeſt.
Laurentius ſayes they meete in the mid-
Columbus ſayes there is no Muſcle in
middeſt of the Forhead; yet he will
re them two, one on each ſide, and
their

their motions different, and proves it by the example of a Cardinall who having the left Muscle cramped with a wound could not move the one halfe of his Forehead; and indeed at the Top of the Nose where they are also more fleshy, they are so joyned, that they may seem one. But that they are two, Anatomy doth not onely teach, but reason and experience, for, all the members are double, that the Body might by keep in æquilibrio; and experience shewes that if one of them be struck with the Palsie, or cut acrosse, the motion of that part is lost, but not of the other whose motion could not remaine entire, if it were one Muscle. *Spigelius* calls them (to note their use) the Muscles of the skin of the Forehead. But *Platerus* elegantly, and I the first I think that ever let fall a word to this purpose *Musculos affectuum animi significativos*, the significant *Muscles of the affections*. But besides these *Frontall Muscules*, there are sometimes two *occipitiall*, which receive into them the Muscles of the forehead, and are reckon'd to have an influence upon the skin and Muscles of

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the Forehead and Eye-browes, So that such men who have these additionall Muscles, have larger expressions of their minds and affections appearing in their moved Foreheards. *Bauhinus* sayes these Muscles of the hinder part of the Head are not found: But *Gabriel Fallopius* and *Platerus* shew by the example of *Antonius Platus*, who could move the whole skin of his Head, that there is such a speaking motion in the Coape or outer Cover of the Head. *Rhealdus Columbus* saith he had a thousand times contemplated this motion (not without pleasure) in the Head of that excellent man *Antonius Platus* whom they now call *Lanigum*; for he moveth the whole skin of his Head strongly. *Hieronymus Mercurialis* hath observed as much in many; Nay *Columbus* proves this motion by his owne example, the skin of whose whole Head was qualified with such a motion by virtue of those Muscles. He therefore recalls these Muscles into play, which were passed over by the negligence of others, the utility of this motion being not to be despised. St. *Augustine* af-

firmes that he ſaw a man in his time, who could, without ſtirring his Head, or touching it with his Hands, raiſe or lift up all the haires of his Head, and make them fall flat upon his face; afterward he could raiſe them againe and returne them orderly to their due places. Which could not be done without the advantage of ſuch extraordinary implements of voluntary motion. Whatſoever inward Cogitation or affection of the mind is attributed by *Plinie*, or obſerved by *Metopoſcopers* and others to appeare in the *Forehead*, they are all exhibited by the operation and inſtrumentall aſſiſtance of theſe Muſcles and ſince the Muſcles, the inſtruments of voluntary motion, are found in the Head, and ſo neere to receive the races and convoy of the Nerves bility of motion from the Braine, ſtands to Reaſon that the Forehead clare the wil and the diſpoſition and affections of the mind. Yet to ſpeake truth, theſe Muſcles are rather to aſcribed unto the *Browes*; and *Spige* ſhewing his warrant from *Galen*, attributes them to the Eye-browes; for

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Eye-brows have ſuch a command over the Front which appeares ſo obſequious unto the acts of their authority, that the actions may juſtly be counted theirs. *Columbus* indeed adds two more proper which the Eye-brows do uſe, which he affirmes that neither *Galen*, nor *Veſalius*, nor any other before him did know. And *Aquapendens* attributes an orbicular Muſcle to the Eyebrows.

Diſſect. XI.

IN *Sadneſſe*, *Griefe*, and *Severity*, *Diſlike*, *Anger*, *Threatning*, *Revenge*, and *Earneſt ſtudy*, we uſe to wrinkle or to bend the Brows from the Sinciput to the Eye-brows, which are then knit about the Noſe; the reaſon is, for that Sadneſſe is a certaine Contraction of the heat and Spirits towards their Principle, in regard of the apprehenſion of ſome ingratefull object, and this effect follows although there be no reall cauſe; the *Forehead* being deprived of the Heat and Spirits, is wrinkled. The materiall cauſe being a melancholly humour affected and kindled with much heat, which

sends up a salt vapour to the Face, which pluckes the Muscles of the Forehead. This motion is performed not only by assistance of the fleshie Membrane, which under the Connative flesh endued with many straight fibres goes into a musculous substance: but by the two Muscles on each side of the Forehead; which motion *Laurentius* from *Columbus* brings to prove, that the Muscles of the Forehead are two, and not one as some will have it; for, if the *Forehead* had but one Muscle, this expression of the Mind exhibited by the touching Brows could not be done, of which opinion also *Riolanus* is. These Pyramidall Muscles united together by oblique fibres from this employment of the Will might be called *Musculi severi & minaces*, The Severe and Threatning Muscles.

Dissect. XII.

PRide, *Arrogance*, *Contempt*, and *Wonderment*, advance and lift up the *eye-brows*; so doth *affected gravity when it is full of disdaine*; the like action of the *Eye-brows* arch-like bent they use wh[en] a[t]

are *angry*, and *proudly threaten Revenge*; *Griefe* and *Sorrow* alſo cauſe a man to uſe the ſame action of his Brows. This motion that exhibits ſo many ſignifications of the Mind, is performed by the benefit of thoſe Muſcles, which ariſing from the upper parts where the haire ends, deſcend into the Inferior parts, lifting up the *Eye-brows*; for, thoſe Muſcles of the *Forehead* are rather to be called (as *Spigelius* notes) the Muſcles of the *Eye-brows*, into which they are implanted, and to whoſe motion they ſerve; ſince they were not deſigned for the corrugation of the Forehead, but the elevation of the Eye-brows: for, if they are reckoned among the Muſcles of the Head that are ſeated in another part, only becauſe they adminiſter unto the actions of the Head; why ſhould not then theſe alſo for the ſame reaſon, although ſeated in the Forehead, be called the Muſcles of the Eye-brows? This motion of the Eye-brows *Riolanus* brings together with Diſſection to prove, that the fibres of the Forehead are not oblique ſtretched out from the top of the Noſe towards

the Temples, as *Columbus* will have them; nor that the wrinkles of the skin might obteine a tranſverſe ſituation; but are carried right downwards as pleaſeth *Galen*, to whom *Veſalius* and *Fallopius* yield their ſuffrage. Theſe Muſcles if they remaine in the middle figure, as Anatomiſts ſpeake, (wherein they do perpetually perſiſt unleſſe when at pleaſure and our arbitriment they are removed) they deteine the Eye-brows in their native poſture and ſituation; whoſe uſe of what decency and importance it is, appeares in thoſe who by the unskilfulneſſe of Chirurgions, and a tranſverſe Diſſection of the fibres of theſe Muſcles, have been deprived of the uſe of theſe ſignifications of the Mind, and have had their Eye-brows too much humbled, that they have fallen about their eyes. Theſe Muſcles from this action might be called *Muſculi Admirationis*, the *Muſcles of Wonder or Admiration*. And becauſe the Occipitiall Muſcles (in them that have them) aſſiſt, as the paire of the Forehead, to draw the skin and Eye-brows upward in theſe ſignifications of the Mind, they may be called

led for distinction sake, *Musculi sublimes, Arrogantiæ, Minabundi, Contemptuosæ gravitatis*, The *Lofty Muscles*, or the *Muscles of Arrogance*, the *Threatners*, and the *Muscles of disdainefull gravity*.

Memb. IV.

Of the Muscles appointed to the Eye-lids for the expediting certaine significant motions of the Mind.

THe *Eye-lids* which are light, most thin and soft, are fitted for a most agile and prompt motion, and to exhibit many significations of the Mind; yet some have thought the lower Lid immoveable, and so by consequence not capable of expressing a voluntary motion of the *Mind*, of which opinion was *Galen*, who expostulates with Nature, why the lower Eye-lid should not participate with the upper in points of voluntary motion? Since it was ordained for the same end, and hath a place no lesse accommodated for the receiving of Muscles. Nature seemes here, as he confesseth, unjust; when she might

have divided it equally between them, yet ſhe would gratifie the upper with the whole priviledge of motion: and not only unjuſt in that, but in making the lower Eye-lid leſſe than the upper, which as other parts ſhould have been equall, yet for that, he applauds the artifice: but his inference from thence, which he ſaies is perſpicuous, that it needed no motion, there he failes; the Reaſon of his Doubt he there ſhews upon an experiment of obſervation: and it ſeemes to him to need animadverſion, and if he had hit on the right, he promiſeth to declare his mind in that Book of Doubtfull motions he intended to write. Here, ſaith he, it is ſufficient to ſay that the ſubtlety of Nature is ſuch, that many Great men having ſought to find it out, yet have not attained unto the full knowledge of it. *Veſalius* in this follows *Galen*. *Archangelus* ſaies the *lower Eye-lids* ſtand immovable, or immovable of themſelves, unleſſe they are ſtirred up by the motion of the *Genæ*. *Weker* ſayes they ſeeme to partake of no motion, there being no Muſcle allowed unto them to endue them

them with any inſtinct of action. *Laurentius* conceives all the motion, and ſo conſequently the ſignification, to be performed by the *upper Eye-lid.* Some ſay that it is after a manner moveable. Indeed the motion of the *lower Lid,* it being leſſe, is very ſmall and obſcure; yet not ſo ſaith *Riolanus,* but every man may deprehend it in himſelf: the other being greater, hath a more evident motion. *Bauhinus* ſaies both the Eye-lids move, as is evident to ſenſe. *Pareus* ſaies there is no difference between the lower and the upper Eye-lid, than that the upper brings forth a more open and manifeſt motion: the lower a more obſcurer, otherwiſe Nature had in vain compaſſed it about with the ſubſtance of a Muſcle, which late Anatomiſts have found out. And indeed the Cauſe of their motion is very admirable; for, it altogether imported them to be endued with a voluntary motion, elſe there were no uſe for them. But to all voluntary motions Nature hath provided certaine Inſtruments, which we call Muſcles, which move the particles into which they are inſerted; for, ſince we

can move them quicker or ſlower, oftner or ſeldomer, or altogether refraine their motion, and againe excite them to motion, is not he deceived who ſaies their actions are naturall and beſides our Will? And in vaine were they given us unleſſe we could uſe them at pleaſure, and to ſome ſignification of the Mind. The Muſcles that are deſigned for the ſignificant motions of the Eyelids are three, one right, and two ſemicircular.

Diſſect. XIII.

Impudence, *Contempt*, and *ſimple Admiration*, cauſe the *Eyes* to ſtare, and require an open Eye; which action proceeding from theſe intenſions of the Mind, is intenſe and *Tonique*, or ſtrained into an extreme figure. *Paræus* will allow no peculiar Muſcle for any ſuch ſignification of the Mind; But the Broad Muſcle performes all, and by its porrection it may ſerve to open the Eye; who having by an exact Anatomicall adminiſtration of that Muſcle, ſhewn how it mingles it ſelf with the

skin.

skin, and the Muſcles of the Lips; when you come, ſaith He, to the *Eyes*, you ſhall teach how by this one Muſcle, the Eye is both opened and ſhut; becauſe it is compounded of a threefold kind of fibres. Although by the opinion of all men that have hitherto written of Anatomie, theſe actions are ſaid to be done by the force of two Muſcles appointed for that purpoſe, and although in their publique Demonſtrations theſe two Muſcles are wont to be ſolemnly ſhewn, yet I think, ſaith He, the very Demonſtrators are no more aſſured of them than my ſelfe. And the ground upon which he tooke this opinion up is, becauſe to thoſe that ſeparate the fleſhy Pannicle or broad Muſcle, no other Muſculous fleſh appeares in thoſe places, than what is of that Pannicle, whether you guide your Knife from the front downward, or from the Ball of the Cheeke upward; beſides, in inciſions in the Eye-brows upon urgent occaſion, we are prohibited to work them tranſverſe, leſt this broad Muſcle falling upon the Eye, ſhould make the upper Eye-lid or upper cilium immoveable:

immoveable: and if any ſuch inciſion happen by chance, we are bid preſently to ſew it up; which thing is a very ſtrong argument that the motion of the upper Cilium or the Superior Eye-lid is not performed by its own proper Muſcles, but wholy depends upon the broad Muſcle for performance. But his next Argument is ſomewhat Philoſophicall to the Doctrine of voluntary motion. Now (ſaith he) if there ſhould be ſuch proper Muſcles in the upper Eye-lid as are deſcribed, becauſe when one Muſcle acts, his oppoſite or Antagoniſt doth ceaſe, and ought to give way and be obſequious: that which is ſaid to open the Eye working, his Oppoſite obſequiouſly yielding, it neceſſarily follows the Muſcle of the upper Eye-lid will be drawn towards it Principle or beginning, as we ſee to happen in Convulſions; becauſe the operation of a Muſcle is a Collection of that part which it moves, towards its Head; ſince therefore ſuch a kind of Collection no where appeares, therfore he thinks it apparent, that all the motion of the upper *Eye-lid* depends upon this broad Muſcle,

and

and that it is the ſole Author of this motion, and conſequently of theſe ſignifications of the Mind exhibited thereby. Nor is it to be omitted what *Galen* affirmes, that the skin was endued with a voluntary motion even for this very action, for it was neceſſary the Eye-lids ſhould be much opened when we endeavor to ſee many Externall things at one time, which is their intention who in this poſture *ſimply admire*, or *impudently Gaze*; for which (a little) the circumfuſed skin, as well that above in the Forehead, as that beneath at the Ball of the Cheeke, hath a voluntary motion, that by extenſion thereof it might open wide the Eyes. *Veſalius* ſpeakes of a broad and fleſhy Glandule, which ſeemes to him to be a certaine vice-Muſcle to lift up the Eye-lid. But we will conclude with the generall opinion of the beſt Anatomiſts, that theſe motions of the Mind are ſignified by the operation of that Muſcle of the Eye-*lid*, which is commonly called *Rectus*, or the ſtraight Muſcle, and from this office *Aperior oculi*, and *Attollens palpebram*, the *Eye-opener*, or the *Gazer*, placed

placed in the upper region of the Orbit of the Eye, neare the *Muſculus Attollens* or Lifter of the Eye, being like alſo in figure to it, proceeding from the ſame Principle as the reſt which move the Eye, and inſerted into the Cartilage of the upper Eye-lid, and by its fibres contracted inwards, draws the ſuperior Eye-lid upwards, the lower of its own accord ſubſiding into its place, aſſiſted, according to the intenſines of the Act, in theſe ſignifications, by the Muſcle of the Forehead. So that this Muſcle commonly called *Attollens palpebram*, might be named from the declaration of theſe affections of the Mind effected by their moving, *Muſculus Impudicus, vel ſimplicis Admirationis*, the Muſcle of *ſtaring Impudence*, or *ſimple Admiration*.

¶ Another expreſſion of the Mind is ſometime performed by this Muſcle, to wit, *Pride*, and *Loftineſſe*; for *Solomon* in a Phyſiognomicall Proverb, obſerved a Generation of men, whoſe Eye-lids were lifted up; and therefore whereas the Attollent Muſcle of the Eye is called by Phyſiognomers *Muſculus ſuperbus*, becauſe it is a ſign of Pride to have lofty Eyes:

Eyes: *Caſſerius* the expert Anatomiſt, would rather have the declarations of *pride* and *humility* to be drawn from the *Eye-lids*, and eſpecially from the upper Eye-lid, for who have this elate, are proud and fierce; they who have it depreſſed, and ſhutting as it were halfe of the Eye, ſo that they ſeeme to reſpect the ground, are *humble* and *mild*. So that it might be called *Muſculus Sublimis* the *Sublime* or *haughty Muſcle* of the Eye-lids.

Diſſect. XIIII.

FEare and *puſillanimitie*, cauſe the affrighted *Eyes* to twinkle, that is to open and incontinently to ſhut more than is convenient. Some have thought this motion of the *Eye-lids* to be done by the inſtinct of Nature, and not upon deliberation or ſet purpoſe; for ſo *Ariſtotle* would have them twinkle againſt things whoſe occurrence threatens danger, So that the Muſcle were unprofitable. But in regard of the preſervation of the Eye, againſt which ſome dangerous thing is preſented it is

meerely

meerely arbitrary: and naturall onely when it proceedeth from some affection of the Body, unto which it is obsequious, as in the *Cynique Spasme*, wherein the upper Eyelid is seene to be naturally moved. *Casper Hofman.* very well contends that this motion of the Eye-lids is meerely voluntary by the example of those two *Gladiators* of whom *Plinie* makes mention in his Naturall History, also by the example of *Socrates* of whom *Aulus Gellius* speakes, but that frequent interpellation happens from things that occur from without, especially the aire light, &c. Indeed usually it is done with no great bent or intention of the mind, as those motions of Election are: but with a kind of remission or slacking of that contention, as they performe actions, who doe a thing, as 'twere Drowzily and with lesse heede; and such never performe a perfect motion, especially Tonique. Now because it is so soone done (as the Proverb speakes) that for the most part we are not aware of its motion, therefore it may be *Aristotle* rather

rather call'd it *naturall* than *voluntary*. Tis true, *Galen* puts this among doubtfull motions and thoſe which are not yet found out. The Voluntary and Naturall motions (ſaith he) are mingled in the Eye-lids motion, which is done in many men without the aſſent of the will, and you ſhall ſcarce ſee any one who can ſo order his Eye-lids, as not to move them, and to remaine with open eyes untill he would cloſe them; and who ſhuts them but ſeldome. But this motion is meerely *Animal*, as *Borellus* and others by many inſtances affirme, and *Galen* afterwards confeſſed his former ignorance in this matter, where he declares the manner how this is done, and reprehends thoſe who were of his former opinion. Some Sophiſters (ſaith he) when they had neither found the moving Muſcles, nor the reaſon of the motion, arrived to that point of impudence to denie that motion to have any dependance upon our will, but to bee naturall, as thoſe involuntary and neceſſary motions of the Heart, Arteries and other inſtruments: thinking it better to lye, than to con-

confesse their ignorance. *Bauhinus* will have no peculiar Muscle ordained for this action, but to be the worke onely of the Broad Muscle. But with *Spigelius* and others we shall declare that this motion of *pusillanimity* is perform'd by two *semicircular* Muscles called *Claudentes*, the *Eye-shutters*; one *superior*, seated in the *superior* Eye-lid, the other *inferior*; that being greater, this lesser; yet there are not wanting some who would have these to be one single Muscle, which yet are two; and observ'd ever to be double in men that are somewhat Musculous, and their principles and insertion are distinct, although it be true that their circular fibres doe touch each other; to these add, that both of them receive distinct Nerves from distinct places. But these Muscles are seated between the fleshy membrane and that which is brought out of the *pericranium*, of which the *superior* or greater, ariseth with an acute begining out of the inner angle of the Eye and part of the Eye-brow that is next the Nose, and so goes transversly toward the outer angle, and at last is inserted into the outer angle. The les-

ſer being ariſen from the top of the Noſe neere the foreward angle of the lower Eye-lid, with a ſharpe begining likewiſe, when, being carried transverſly, it comes to the midle part of the Eye-lid, becomes more fleſhy, circuites the externall angle, and aſcending to the ſuperior Eye-lid, it is inſerted into it with a broad end. Theſe two Muſcles when contracted into themſelves, the greater drawes downe the upper Eye-lid, and the leſſer attracts and raiſeth up the lower Eye-lid, ſo that the lower Eye-lid is onely lifted up, and that with the ſecond Shutter. *Bauhinus* who would have theſe two to be but one Muſcle by reaſon of their fibres which are continued ſayes, that this Drawn towards its begining, at one time moves the upper Eye-lid downwards and the lower upward, and ſo conjoynes and ſhuts both the lids together; which the continuity in circuite and angle, and the moving in the ſame angle, eſpecially more conſtrict which is perceived by ſight and touch doe prove: for, nothing can be conſtringed and come to a mutuall contact, unleſſe ſome parts be led up-

upward and other parts downward; But in reſpect of the Eye-lids theſe are two *Semicircular* Muſcles, and ſeparated, each makes a *Semicircle*, but both joyn'd together they make a perfect circle; but there is a *Semicircular* Muſcle found in each Eye-lid as well in the lower as the upper, whoſe motions are manifeſt, neither could ſo quick and frequent a motion be performed by the upper Eye-lid alone, ſince the motion downward requires a longer ſpace than is convenient for ſo great celerity, wherfore they eaſier come to a mutuall contact, if one be aſſiſted by the other; the lower Eye-lid although it have two Right motions, yet it hath not two Right Muſcles as other parts uſually have for the ſame occaſion; but this Circular Muſcle performes both actions. Now theſe two *Semicircular* Muſcles or one *circular* which thus ſhut the Eye in *feare* and *puſillanimity* might be called from their manifeſtation of the mind, *Muſculi* or *Muſculus Puſillanimitatis*, the Muſcles or Sphincter of Puſillanimity. But true Cowards who are of the worſe Sect of winkers are wont to ſhut their

Eyes

Eyes very hard, not daring to behold at all what they apprehend ſo dangerous; to this extreme figure that of *Galen* is to be applied, who obſerves that one reaſon why the circumjacent ſkin was endued with a voluntary motion was, the reliefe of this action: for, the eyes that were then to be exactly cloſed and conſtring'd by all the circumjacent parts, when they feare the incurſion of any danger upon them, for that end the bordering skin (both that above in the Forehead, and that which lyes below about the balls of the Cheeke) being replicated upon it ſelfe by a voluntary motion, ſhuts the Eye according to the timorous endeavour of the mind; and upon this occaſion, the Orbicular Muſcle of the Eye-brows is not onely aſſiſtant, but chiefe *Operator*, which may thereupon be called *Muſculus vecordiæ*, the Daſtard Muſcle, or the Ranke cowards Sphincter.

Memb.

Memb. V.

Of the Muſcles that ſerve to the ſignifications of the Mind exhibited by the motions of the Eye.

THe *Eyes* of man are the moſt cleer Interpretors of the affections o the mind; wherefore ſince they were for that purpoſe to be endued with a voluntary motion, and all motions are performed by Muſcles, therefore the great Architect gave Muſcles to the *Eyes*, whereby they are moſt ſwiftly moved according to the inward motions of the mind, whence the *Eye* by the Philoſopher is ſaid to be the moſt moveable part of our Body, by which advantage it hath more opportunitie to expreſſe the motions of our mind Which Muſcles are uſually accounted ſix, becauſe as they ſay there are but ſix motions in mans Eye, allowing no Muſcle for the *Tonique* motion of the Eye, which yet many ocular *Anatomiſts* doe; which Muſcle may be divided into more. If you would obſerve th

the proper motion of these Muscles (when they remaine in their seat) bind a thread to every one of them not far from the Tendon, and then draw it, and you shall see how each Muscle works the Eye to that motion which exhibits the signification of the Mind which it was ordained to promote.

Essect. XV.

Pride, *Contempt*, and *Disdaine*, lift the Eyes upward toward the Eye-brows. The Muscle, the Organ that causeth this lofty motion or exaltation of the Eye is, the great Muscle, the first in order; for, *Pride* will have the first place, and loves precedencie. It is commonly called *Attollens* or the *Lifter*, arising from the upper part of the orbite of the Eye, neere where the Optique Nerve comes forth, and is inserted into the Coat (called *Cornea*) of the Eye, where it is cleare and neare the Iris, by a thin and membranous Tendon, which when it is drawn to its *Head*, it helps to declare the *Pride* of such men who are lifted up in their own conceit. There-

fore

fore more elegantly and appoſite to th
ſignification of the Mind, named *Mu*
culus ſuperbus, the *proud Muſcle*; becau
it lifteth up the Eye with a kind of *Di*
dain, or the *Elate* and *proud Muſcle*, becau
in ſuch men it doth ſeeme to be round
and more prompt to its office, as *Sp*
gelius well obſerves. And although the
is a naturall reaſon for the greatneſs an
ſituation of this exalted Muſcle, becau
there is greater ſtrength required to li
up than to pull down: yet it is very r
markable, that it hath a ſignature for t
ſignification of Greatneſs, in that pro
portion it hath to the other Muſcle
and of *loftineſs* and exaltation of Mind
in being placed above in the ſuperi
part of the Eye. This Muſcle might
more fitly called *Muſculus Sanctus*, t
Devout or holy Muſcle, this being the Mu
cle by whoſe operation in the pious a
fection of the Soule we lift up our Ey
to Heaven in Prayer.

Diſſect. XVI.

IN *Baſhfulneſſe*, and *Shame-faced mod*
ſty, and in exhibiting an *humble rev*
rence, with a ſweet demiſſeneſs we dra
o

our dejected Eyes downward toward the lower Lid. The Muſcle that cauſeth this motion is, the *Second* of the Eye commonly called *Muſculus Deprimens*, the Depreſſor or puller-down of the Eye; by ſome Anatomiſts (as I find it fitted to my Deſign) it is called *Muſculus Humilis*, the *Humble Muſcle*; for variation we call it the Muſcle of Modeſty, or the Baſhfull Muſcle, Not without an Allegoricall ſignature of proportion leſſer than the other, although the Eye alſo which with its own weight ends downward needed no greater motor. And as *Humility* is oppoſite to *Pride*, is juſtly ſeated oppoſite to the Firſt, and in the inferior and lower part of the Eye, by that ſignature of ſituation ſhewing, that it is fitted to expreſſe the lowneſſe of Mind, which it moſt ſweetly doth when it is drawn to its Head. It riſeth in the inferior part oppoſite unto the former Muſcle of *Pride*, and hath the ſame inſertion as the former.

Diſſect. XVII.

TO turn the apple of the eye towards the Noſe, is their peculiar action

who are *Sowre* and *Severe*; for, ſuch are of a *Contuitive*, *Grave*, and *Cogitabund* aſpect, ſuch as is ſeen in thoſe who with ſome Tragicall and Goblin-like look would affright and ſcare others. The Muſcle which when it is drawn to its Head performes this motion and ſignification of the Mind is, the *third* Muſcle ſeated in the great Angle, and ariſeth from the Orbite of the Eye, neere the Origination of the Proud Muſcle, and is inſerted as the former. It is commonly called *Adducens*, the To-leader; becauſe it leads the eye inward towards the Noſe; & by the Barbarous *Bibitorius*, the Toſſe-pot; becauſe they make uſe of this Muſcle who look into the Cup they drink out. Dr *Crooke* calls it the Gleejng Muſcle; for that the Eye is uſually turnd that way in gleejng; we may call it the Squinting Muſcle; I ſay the Tragick or Hobgoblin Muſcle, but moſt oppoſite and pathetically it may be called *Muſculus acerbus & ſeverus*, the *Sowre* and *ſevere Muſcle*.

Diſſect

Diſſect. XVIII.

Waywardneſſe, Indignation, Contempt, and *Diſdaine*, ſometimes draw the Eye to the leſſer angle, or to the Temples; which motion and ſignification of the Mind is performed by the *fourth* Muſcle oppoſite to the *third*, ariſing and repoſed in the outer ſide, or externall Angle of the Eye, and inſerted as the former, and commonly called *Abducens*, or the Fro-leader; for, when this Muſcle is drawn to its Head, the Eye becomes the Interpreter of ſuch affections of the Mind. This Muſcle I find more ſignificantly called *Muſculus indignatorius*, the *Muſcle of Indignation*, or the *wayward Muſcle*. We call it ſaith Dr. *Crooke* the *Scue-Muſcle*, or the *Muſcle of Diſdaine*. And the obliquity of the ſituation affords a ſignature for the ſignification of the motion: for, when the Eye aſſiſted by this Muſcle looks askaunce or askew upon any, it moſt properly exhibits an overthwart regard, or ſlighting Diſpoſition of the Mind.

Diſſect. XIX.

W*Antonneſſe*, and A*matorious petulancy* make uſe of a rolling Eye to expreſſe their *procacity* in. *Archangelus* conceives that this Circular motion of the Eye, and expreſſion of the Mind is done, when all the foure firſt Muſcles at divers times without ſtay ſucceſſively work. Which is alſo the opinion of *Columbus*. Which *Fallopius* reprehends and ſaies, that they erre who think the oblique motions of the Eyes are done by the ſtraight Muſcles looſed and ſtretched by turns, and acting in ſequence, denying that out of two or more refracted right motions, a Circular ſhould reſult; ſince there is no proportion between a crooked and a ſtraight; we may adde with *Galen*, one motion is not made of many, as figures are made of lines; yet *Platerus* is of opinion, that if two right Muſcles of both ſides work together, oblique motions may be alſo accompliſhed by their cooperations. But *Baubinus*, *Veſalius*, *Spigelius* (which is the moſt true and authenticall opinion) attri-

attribute this obſcure circumverſion and rolling expreſſion of the Mind to the fift and ſixt Muſcle, which as *Veſalius* well obſerves, as they chiefly conduce to Circumverſion of the Eye, yet they drive it after a manner upward & downward: So that the whites obliquely caſt up & down, cauſe a leering look, which is called the *Soeepes Eye*. The *fift* Muſcle which is the firſt oblique, and the rolling or circumvolving exterior or inferior from its ſituation, and Minor becauſe leſſe than the ſixt, this is ſeated in the exterior and internall ſeat of the Orbite, between the Eye, and the Tendons of the Humble and Severe Muſcles, having its originall from the riſt which is in the lower part of the Orbite, and joynes the firſt bone of the Jaw to the fourth, and is implanted neare the Iris with an oblique Line, between the Tendons of the proud and wayward Muſcles; whoſe very ſituation and inſertion ſhew, that *love* which they ſerve to expreſſe, is a paſſion compounded of all the other; the office of this Muſcle is to roll the Eye obliquely downward to the externall Angle with a circular

motion, and ſo to turne the ſight of the Eye towards the Noſe. Yet about the riſing and inſertion of this Muſcle there is great difference of opinion among Anatomiſts, the moſt erroneous *Archangelus* hath well confuted, that is theirs, who would have it to riſe and end in the Eye, which is contrary to the Principle of voluntary motion: for, if every thing that moves, is moved upon ſome Quieſcent, and in the moving of the Muſcles, the originall of the Muſcle moving is ever quieſcent, it would follow that the Eye in the very ſelfe ſame article of time ſhould be moved and reſt, which is impoſſible. The fixt Muſcle, and the ſecond of the Oblique commonly called the interior or ſuperior circumagent, and the Major becauſe the longeſt of all the Muſcles of the Eye (which although it exceed them all in length, yet on the contrary in regard of its tenuity it is the ſmalleſt of all; this not exactly oblique as the other, but partly ſtraight and partly oblique, it ariſeth out of the ſame place from whence the *Adducens* or To-leader doth, and having paſſed by the *Pully*

and

and going over the Proud Muſcle, as amorouſneſſe many times ſurmounts mens pride, and brings them to a wanton humility) it is inſerted in the upper region of the Eye, between the Tendons of the Proud and Wayward Muſcl; the uſe of this Muſcle is to roll the Eye with a kind of circular motion towards the inner Angle, and ſo to draw the apple of the Eye from the Noſtrills. Theſe Muſcles I find according to my Deſign, called *Muſculi amatorij*, the *Rollers*, or *Muſcles of Love*, and *Circulares*, the *Muſcles of the amorous Circuit*; the ſuperior Circulator being alſo called *Muſculus Trochleæ*, or the *Muſcle of the Pully*, which is a little Cartilage reſembling a Pully, hung by a Ligament in the coneave or upper and lower part of the inner Angle of the Eye, made for the Eyes ſake, found out firſt by *Fallopius*, and by *Laurentius* and *Aquapendent* called his Pully, ſerving this Muſcle for a promptneſſe of motion, which from thence obteined its name; for, it hath a Canale through which the Chord of this Muſcle paſſeth, and when the Muſcle is drawn inward towards its Prin-

ciple or Head, his Chords or Strings with a kind of circular motion obvolve or roll the Eye to the greater Angle. This is the Muſcle moſt active in this amorous rolling of the Eye, and hath a ſignature for the facilitating of an eaſie and amorous inſinuation, expediting and facilitating the motion of the other; both of them being not ſo fleſhy as the others and ſmall, have a ſignature for a ſwift and nimble moving, to which the round figure of the Eye doth much confer; for, a Spherical figure is moſt convenient for a ſwift motion, which precedes all other movings in a wonderfull velocitie, a circular motion having two advantages of ſpeed beyond any other. *Fallopius* ſaies he cannot ſometimes refraine from Laughing, when he ſees in mans eyes Muſcles the Authors of Circular motion, and yet that they were not found by the moſt exerciſed Anatomiſts.

Diſſect. XX.

IN *Cogitation, Admiration, attentive Deliberation,* and in *voluntary Extaſies of the mind* the Eyes are fixed, and the Eye-lids remaine unmoved, and the Head

Head let downe, we contemplat the earth with a ſet, wiſt, or muſeing look; which motion is *Tonique*, and is done as *Bauhinus*, *Laurentius*, *Spigelius* and others ſuppoſe, when the foure firſt Muſcles of the Eyes, the *Lifter* the *Depreſſor* the *To-leader* and the *Fro-leader*, worke together, for then the Eye is drawn inward, fixed, eſtabliſhed and contein'd; which is then according to Nature, when the fibres of all the Muſcles are equally intended and ſtretched out; So that the Muſcles ſeeme then to be at reſt, though indeed (as we have often ſaid) they doe as *Galen* ſpeakes, *quiete agere*, act in reſt, for every action of the Muſcle is a moving. The manner how this is done (as they ſay) is very remarkable, the foure Muſcles ariſe from the *Conus* of the Orbit of the eye or the roote of the Optique Nerves, thence ſtretched to the Optique Nerve and to the eye in a ſtraight line they tend to the horny Coate, but before they come thither they end in a broad Tendon whereby they are joyned to the Tendons of the other Muſcles & ſeeme to conſtitute a proper membrane, en-

compaſſing the whole eye, this tendonous membrane is inſerted into the hornie Coate in that part where it is pellucid before the Iris or Rainbow of the Eye, Whence it comes to paſſe that al the Muſcles working together the Eye is ſtaid and eſtabliſhed. But *Columbus* who challengeth the fift Muſcle as diſcovered firſt by his invention, affirmes that Muſcle to come into the aid of the other foure, which ſtayes the Eye, as its ſituation ſhewes, when it is contracted towards its Head, holding the Eye that it fall not out of its Seate. And *Laurentius* will have all the ſix Muſcles of the Eye to concurre and to ſtretch their fibres to this Ballancing or equall fixing of the Eye. This makes *Lavellus*, *Fontanus* and others contradict *Galen*, *Veſalius*, *Fuchſius* and others that follow him, as if there were no need of a ſeaventh Muſcle. But although *Spigelius* and others will allow no Muſcle to be purpoſely aſſign'd to this *Tonique* motion of the Eye: yet *Avicen*, *Fernelius* and ſome late expert Anatomiſts are for the ſeaventh Muſcle, affirming that the Muſcle which is moſt active and providently

dently deſign'd to this action is, that *bulbous* and *orbicular* Muſcle which they leave to Beaſts, who have need of ſuch a Muſcle by reaſon of their prone aſpect, whereas mans *os ſublime* makes it unneceſſary. As for them who cannot ſee this Muſcle (if there were any doubt of it) the expreſſion of *Fontanus* which he uſeth about *Folius* his affirming to have ſometimes ſeene the *venæ lacteæ*, may be applyed. It is eaſier to believe one that writes affirming he hath ſeen it, than him who denies he hath ſeene it: for, becauſe one hath not ſeen a thing, it doth not ſtraightwiſe follow that that thing is not, but that which one truely ſees, that is, becauſe ſenſe is of things exiſtent. This Muſcle therefore that encompaſſeth the Optique Nerve and the Baſis of the Eye, hath a ſignature of Situation for this purpoſe, and therefore being the Chiefe operator it might be called the *Tonique Muſcule*. And becauſe *Admiration*, *Cogitation* and *attentive Deliberation* are a kind of ſuſpenſion or fixing of the mind, and an intent application (for, the whole force of the mind is fixed upon the thing and

therefore

therefore it is called an intention) And becauſe Extaſie is a certaine exceſſe of the mind and phantſie in *Admiration*, from whence the Nerves are ſtretched and the Eyes made immoveable in reſemblance of the poſture of the mind, this Muſcle might be called *Muſculus intentæ Cogitationis, voluntariæ Extaſis, intentæ Deliberationis*, the Muſcle of earneſt Cogitation and Deliberation, or the Muſcle of the Ecſtaticall intention of the mind, or the *Muſing Muſcle*. ¶ *Amazement, Aſtoniſhment*, and *Stupidity*, (paſſions of the mind working in an extraordinary manner upon the ſame Muſcles being then paſſive) cauſe ſuch an immoveable fixing and ſtaring of the Eye. This is of things formidable and is an affection above an Extaſie, which has then no name but is called Horror from its effect; for, the Spirits that move the Muſcles being made immoveable, the Eyes become ſtiff as horne; for, *admiration* cauſeth a tenſion, *feare frigiditie*, whence the Nerves become diſtended and as it were congealed. Generally this ſet motion is the other kind of that aſpect which they call

Toni-

Tonique, and is beſides nature, when the Eyes remaine fixed whether we will or no: which happens (as they uſually ſay) when the faculty that moves the Muſcles is reſolved, weaken'd or wholy extinguiſhed; or becauſe thoſe Muſcles are all equally gather'd and contracted into their Heads.

Memb. VI.

Of the Muſcles aſſign'd the Eares for certaine ſignifications of the mind.

Diſſect. XXI.

Laramontius and indeede all Semeioticall Philoſophers are here loſt, concluding that there is ſcarce any reflu&ction of the affections into the Eares, and that of themſelves they have no order at all to action. *Cælius* ſaith they are immoveable, or if they bee moved that motion of theirs is duller and leſſe preceptible. *Galen* takes not away all motion from our Auricles, whoſe ſubſtance is (as his words are) but *fere immobilis*. *Athenæus* deſcribing *Hercules* greedily eating ſaith he mov'd his Eares

no

no leſſe than *Quadrupedes* doe; where *Cauſabon* beſides which he brings out of *Euſtatbius* ſpeakes of one *Muretus* who could manifeſtly move his Eares. And *Hofman* ſayes hee hath ſeene them that could doe as much. *Juſtinian* the Emperour had ſuch Eares, and therefore the people among other opprobious indignities offer'd him in the Theater, as you ſhall find in *Procopius*, called him Aſſe. S. *Auguſtin* writes of certaine who could at their pleaſure move their Eares either one alone or both together. *Veſalius* alſo ſayes he ſaw in *Padua* a Lawyer one *Claudius Symonius a Forojulienſian* a facetious man, and one *Petrus Raviſcerius* of *Geneva* a valiant and ſtout man, who could at their pleaſure move their Eares. All the Family of the *Flacci* of *Rome* had this moving of the Eares, and *Scipio Du Pleſis* the Reſolver a great obſerver of the curioſities of Nature ſayes that hee himſelfe had ſeene in *Gaſcoigne* two men who had this moving. And when I was a boy I remember a Schoolfellow of mine in whom I was wont to obſerve that by way of ſport he would often wagg his Eares. So that the Eares

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although in man for the moſt part they are immoveable, ſo that their motion is ſenſibly perceived in very few; yet if it happen that we move them at our pleaſure as has bin obſerv'd in many, that is performed by Muſcles; *Celius* imagines that theſe Muſcles which are perceived to be ſo wonderfully moved in ſome men, is not by reaſon of the inward motion of the Eare, but by extruſion or excuſſion of the Muſcle that moves the Jaw, which ſometimes is drawne ſo neere the Eare that it toucheth it. But indeede the Muſcles whoſe action is motion and the Nerves which are commonly obſerved about the Eares doe declare it to be true that the motive virtue doth flow into the Eares. And *Veſalius* the great Anatomiſt affirmes that they are moved by reaſon of their Muſcles. Indeede as *Caſſerius* wel argues, Although the energeticall force of moving be only deprehended by the ſenſes as apparent now & then in a few certaine men, yet the influence of motion is generall into the Eares of al men, which makes them partakers of voluntary motion; for, unleſſe it were ſo, wee

muſt proteſt againſt the Doctrine of all Anatomiſts now from many ages confirmed by moſt certaine, infallible and frequent obſervations; That motion is not the eſſentiall action of a Muſcle, ſeeing there is no auricle but hath its proper Muſcles: Neither doth the Senſuall immobility of all auricles almoſt perſwade this very thing; for, it is an *Elenchus Conſequentiæ*, The motion of the auricles appeares not to ſence, *Ergo* they have none: For, although we are to yield to reaſons, when the effect appeares to the ſenſes; yet where the ſenſe proves defective and reaſons may prevaile, the effect is not to bee denied; for, if as *Galen* witneſſeth, there concurre to an Agent a fit ſituation, a due ſpace of time, a valid force of the Agent and a diſpoſition of matter to receive, what ſhould hinder the effect? theſe for the moſt part to be preſent in the accompliſhing the motion of the Eares, even Senſe doth teach; wherefore although the motions of the Eares are not made manifeſt, yet it is not to be denyed, but ſome motion at leaſt and leſſe perſpicuous to ſenſe is performed by them.

The

The cauſe why men doe not ordinarily and evidently move the exterior Cartilages of their Eares as other Animalls doe which have them is, as *Baubinus* and others conjecture, becauſe thoſe principalls of motion are very ſmall, So that *Galen* calls them certaine Delineaments of Muſcles, and they have little threads of Nerves, So that the motive Spirits cannot in ſufficient quantity flow into them: and the Eares are too little and Cartilagineous, whereby the little Branches of the Muſcles and Nerves cannot be expanded; whence their motions are ſo rare, and ſo little perſpicuous and obvious to ſenſe, which are greater in ſuch men whoſe Eares are perſpicuouſly moved. And where the occipitiall Muſcles are found, theſe of the Eares are manifeſtly diſcover'd. Hence it may be *Columbus* had this knack of moving his Eares, and he St. *Auguſtine* ſpeakes of, both which could move the whole skin of their Heads by virtue of thoſe Muſcles, and having them (if *Fallopius* and *Riolanus* his affirmation hold) had theſe Muſcles of the Eares manifeſtly obedient to their wills.

Ano-

Another reaſon why the Eares in men are not ordinarily at leaſt not evidently ſeene to move is, leſt the Senſe of Diſcipline ſhould be depraved, eſpecially ſince the eares of man are ſmall wherefore they are moved every way to receive ſounds by the moſt ſwift motion of the Head, and therefore in Brutes who want that expeditious mobility of the Head, they are greater, to be more capable of ſounds from all parts, and to drive away flyes, which man can doe with his hands. So that to prevent a greater inconveniency and undecency than their ordinary employment could recompence, they are uſually ſuſpended from preceptible actions in moſt men, yee, this is not without a *Tacite elogie* of the Pleropheria of motion which the face enjoyes by its Muſcles, to which the ſurpluſage of auricular motion might ſeeme unneceſſarily redundant; for, the Face of man is ſo ſufficiently provided of Muſcles, the Organs of voluntary motion, which are ever ready to expreſſe any motion his will is pleaſed to concurre unto, and make a ſignificant declaration by, that he

he needes no ſuch additaments as the Muſcles of the Eares would make, if they were ordinarily reduced to manifeſt action, yet ſuch who have theſe Muſcles large enough for apparent action, ſeeme to have a Patent for excellent *Pantomimicall* utterance, ſuch additionall helpes, in all probability, giving advantage of ſupernumerary geſtures. Now although to men that can expreſſe their affections not onely in wordes, but alſo by ſpeaking motions, eſpecially in their Faces which are open and diſcovered, Nature hath ſeem'd to have thought it undecent and unprofitable, to have any great volubility or flexibility (for ſo we muſt ſpeake for want of better wordes) in the motion of their Eares as other Animalls, the flexibility of his Head and Neck ſerving the Eares to all ſuch intents and purpoſes; yet ſince theſe Auricular Muſcles (the invention whereof are due to *Fallopius*) were appoſitely conſpicuous in them by whom they were manifeſtly moved while they lived, and are not onely deſcribed by him, but moſt Anatomiſts, we will firſt deſcribe them, and then ſee

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whether any thing can be made of their motions. They are uſually number'd foure, Common, and Proper. *Attollens* or the lifter up, *Deprimens* or the puller down, *Adducens ad interiora* the To-leader, *Abducens* the Fro-leader. The *Attollent* ſeated in the anterior part of the Face placed upon the Temporall Muſcle the *Attollent* of the Jaw; From the externall end of the Frontall Muſcle where it is contiguous to the Temporal is inſerted into the upper part of the Auricle. The *Detrahent* ſeated in the hinder part of the Head fetching its originall from the Mammillary proceſſe of the Tempils and ends in a Tendon which embraceth the whole roote of the Cartilage of the Eare ſo, that one portion of it toucheth the upper part, the other the middle, the third the lower part. The forward *Adducent* or To-leader is a Common Muſcle, to wit a particle of that which they uſually call *Quadratus* or the *Detrabent* of the Cheekes, this aſcending with its fibres is implanted into the roote of the Auricle. The backward *Adducent* is placed in the Nowle ariſing from the Covers

of

of the Muſcles of the Nowle is implan-
ed into the hinder part of the Eare.

Since therefore Nature laid not in
heſe Muſcles as intending them for any
ſe of Hearing, for we heare againſt our
ill; ſome other uſe they have, ſince no-
hing appeares in the Body that was
ade in vaine, or hath not ſome office
ſigned. But our Anatomiſts that ac-
nowledge, name, and deſcribe theſe
uſcles, nay, appoint their very acti-
ns, expreſſe not what thoſe Actions
ay aime at, or are uſefull unto, no
ention of any advantage to the Head
their moving; why ſhould theſe
uſcles paſſe thus by tradition from
and to Hand, and yet remaine as *non
nificants*? they had as good be *non Li-
ets*. I confeſſe, ſo novell a thought
which for all I can find was never en-
tained or ſcand by any Head) would
ite a curious Fantſie, and ſuch a one
mine is, whoſe Motto is, *In nova fert
mus, tentata relinquere pernox*, to
empt a Comment upon this conceal-
nt, and the great ſilence of preteri-
n in all Diſſectors; But having had
opportunity (ſince this Deſigne) to
ob-

obſerve any one that had this knack o
auricular motion, I ſhall not ſuffer m
Fantſie to drive far after a ſeemin
Perſonality, our Scope being to deſcrib
ſuch Actions only, which are generall
and univerſally uſed by all men, as ap
parent ſignifications of their Mind
and indeed there could be little uſe o
ſuch a Nicetie, ſince few wiſe men de
light much to ſhew their Eares. But
Columbus would not deſcribe theſe Mu
cles becauſe they were but rarely found
yet confeſſeth he had found two of them
and at laſt that he had obſerved Ear
like unto Brutes in men, which I ſup
poſe he meant of their motion; So
ſhall leave others to gueſſe what pro
portion theſe Auricular motions in me
do hold with the moveable Eares o
Beaſts, who participate with us in point
of Animal motion. It is well know
that moſt of Creatures that have n
Countenance to expreſſe the variatio
of their Senſitive Appetites and Imagi
nation, do expreſſe their Senſes by cer
taine motions or wagging of their Eare
for when they are *feareſull* or *affrighte*
they do *auriculis micare*, *wag their Eare*
ſuc

ſucceſſively erecting and depreſſing, or changing one Eare, the other erect; when they are *faint* and *weary* their Eares *languiſh*; when they are *erect* or *furious*, they *prick up their Eares*; when they are *ſick*, their Eares *flag* and appeare as it were ſolv'd. Now, as in other Creatures the motions of the Eare have their diſtinct ſignifications; ſo no queſtion they have in thoſe men in whom they are perceived to move, and in moſt of us, if we had ſubtiltie enough to note them, and ſuch an open conveniency of obſervation as we have for Auricular motions in Beaſts.

Memb. VII.

Of the Muſcles that ſerve to the Significations of the Mind, exhibited by the motions of the Noſe.

THe whole Noſe is not, indeed, moved, but only the inferior Cartilaginous parts, which Anatomiſts are wont to call the Wings of the Noſe; which ſince they are movable, and were to be moved by a voluntary motion, there

was

was a neceſſity that Muſcles ſhould be inſerted into them; for although their chiefe ſignifications may ſeeme to be performed by the Muſcles of the *Lips*, inſomuch as they alſo touch the Wings of the Noſe, even as the firſt Muſcle of the Cheekes or Face, is inſerted into the root of the Noſe: Yet in thoſe that have great Noſes, Anatomiſts conſtitute two-fold Muſcles peculiar to the Noſe. Theſe move the Wings of the Noſe with a voluntary motion, the other part of the Noſe remaining immoveable; and being throughout connexed with the *skin* that lies over them, it adminiſters unto the Motion and Corrugation thereof. So that it is apparent to the Eye that the Noſe is moved with a voluntary motion: So likewiſe it follows and is agreed upon that its motions are accompliſhed by Muſcles, although the Controverſie be great among Anatomiſts concerning their *Eſſence*, *Original*, *Number*, *Figure* and *Connexion*; abſurd therefore is their opinion, which deprives the Noſe of all voluntary motion, affirming that it is only lightly moved by the intervention and tract of inſpi-

red Ayre, ſince this exterior motion of the Noſe is ſo manifeſt, and appeares ſo obedient unto our Will, that no man but may perceive it, eſpecially ſince in the Diſſection of the Noſe, you ſhall find Muſcles which no skilfull Anatomiſts can deny to be the true Authors of this Action.

Diſſect XXII.

Sagacity, Noſe-wiſdome, and *Senſorious Deriſion*, cauſe a man to *criſpe* and *wrinkle his Noſe upwards*, the Noſtrills being ſo raiſed and contracted, that the Noſe ſeemes *crooked* and *hooked*, and by that meanes becomes *acute*. Theſe ſignifications of the Mind are exhibited by the *Noſe*, through the operation of thoſe Muſcles of the Noſe, which are commonly called *Abducentes*, or *Aperientes*, or *Dilatores*, the *openers*, or ſtretching Muſcles, which are two paire. *Caſſerius* (indeed) would have this to be but one Muſcle which hitherto hath been accounted double, dilating the Noſtrills by drawing the Wings of the Noſe upwards, that upon any exigency

of Paſſion the Aire might have a more plentifull Ingreſſe and Egreſſe; for, otherwiſe this Muſcle would be void of all employment; yet ſomtimes being not ſufficient alone, for ſome extraordinary neceſſity, it calls the Muſcles of the Cheekes unto its aid, yet when reaſon requires, one part of it can act alone, the other part reſting from action. But they are two paire, the firſt paire drawing its originall from the Jaw-bone neere the firſt proper paire of the Lips, is inſerted partly into the lower wing of the Noſe, and partly into the higher part of the upper Lip called the *Philtre*: The other paire covering both the ſides of the Noſe reſembles a Triangle; For it ariſeth with an acute Origination from the top of the Noſe, and deſcending obliquely by the bones of the Noſe it ends in a broad Baſis, and is implanted into the wings of the Noſe. *Fallopius* ſayes there are certaine fleſhy fibres not few of them ariſing from the midle of the Eye-browes and the *Spina* or Ridge of the Noſe, which deſcending obliquely, are added to the firſt paire, and implanted into the *pinna* of the

ſides of the Noſe to *draw or rivell it upwards*, which you may reckon for a paire of the Dilators of the Noſtrills, or for a part of the firſt paire it makes no matter which, ſo we know the uſe of of it in this revulſive action, and indeed theſe ſecond paire are very properly by Dr. *Rhead*, called *Erectores*, or the Raiſers upwards. When theſe two paire worke together and are forcibly contracted to their Heads, the wings of the Noſe are drawn outward and upward, whereby the Noſtrills are not a little dilated, and the skin of the Noſe and the adjacent parts moſt ironically wrinkled: and becauſe they are continued to the Muſcles of the Lips, the upper Lip is drawn up together with the Noſe, which lets a ſpeaking emphaſis upon the Action. Now becauſe Noſe-wiſemen uſe this action, Snuffing up the wind withall, as if they ſmelt ſomewhat anniſe; and that they ariſe from between the Eye-browes which are the naturall Cenſors of the Face, and the thrones of Judicature, obliquely deſcending to draw men as with a proboſke, before the tribunall

of judgement; And the Noſe which from its acuteneſſe in this action is often put for judgement, and dedicated to dry Deriſion or Sagacity, Theſe Muſcles might be ſignificantly and moſt properly (in reference to the employment they have from the mind) bee called *Muſculi Sagacitatis, vel Cenſoriæ judicationis*, The Muſcles of Sagacity, or Cenſorious judgement.

Diſſect. XXIII.

CHoler, *fuming* and *precipitate anger* or *furious madneſſe* cauſe a man to blow up and downe his noſtrills with wind, with which ſudden and fiery ſufflations the noſtrills ſeeme to ſmoke like a Furnace. *Galen* ſeemes to be of opinion that the firſt part of this action of the Noſtrills was caus'd by no Muſcles, but by inſpiration onely, and that in vehement inſpirations, the wings of the Noſe followed the impetuous attraction of the breath; But *Veſalius* objects, that in very ſtrong inſpirations, the Noſtrills may be preſerv'd in this poſture. *Ariſtotle* (which is

is no great marveil ſince he knew not the active force of Muſcles) thought that in the profundity of the Noſe there was a certaine *valvula*, which was opened with inſpiration to give egreſſe to the Aire, which upon ceaſing of the inſpiration, was ſhut; which *Galen* refutes, pronouncing it to bee a thing very uncertaine, and that wants Demonſtration, and were to no purpoſe; and if we ſhould grant it (ſaith *Galen*) the motion of this Valvula muſt either be *Animal*, *naturall*, or *violent*. No man will ſay it is *voluntary*, becauſe to Animal motion there is no neede of a Valvula, (ſuch imaginary things as *Henericus Regius* hath gone about by Demonſtration to perſwade us unto) and an *animal* motion obeyes our will, but this lid of the Noſe is never open'd but when we breath; againe, a Muſcle is the inſtrument of a *voluntary* motion, but in the inner top of the Noſtrils there are no Muſcles: Nor will this motion be *naturall* as that of the Valvula of the Heart, becauſe the motion of the Heart is perpetuall, and is not performed according to our will: And we cannot

say it is *violent*, for Doores are open'd by the impetuous rushing in of Aire, without attraction of breath. But although the Nostrills in great inspirations are a little elevated, and the wings are brought in as following the impetuous force of the Breath, and in expiration they againe reside and are blown out; yet the Nostrills were moveable and endued with Muscles for this purpose, because to greater and sudden inspirations and Efflations, they might not a little confer, their mobility wonderfully relieving the mind in such sudden Efflations of anger; not a little assisted by the intercostall Muscles, which according to *Galen* serve for a plentifull Efflation, and in most vehement respiration, the Muscles above the Breast come into their aid. But although *Columbus* doth not acknowledge the constringent Muscles, yet we with *Spigelius* and others that describe them, must attribute this Action chiefely to them, although we can not fully agree with *Stephanus* That to the contraction of the wings of the Nose there are no opposite Muscles

wh

who ſaith, when the Conſtringent ceaſe from their action, the Noſtrills are forcibly driven out with a Cholerique wind. Theſe Conſtringent Muſcles are very ſmall as they can ſcarce be ſeene or diſtinguiſhed, unleſſe in thoſe that have great Noſes; and they are two paire, whereof the firſt paire is externall, ariſing from about the roote of the wings, and is inſerted into the little Globe of the Noſe; the ſecond is internall, and hidden in the cavity of the Noſtrills, ariſing from the bones of the Noſe where they end neere the Cartillages, and is inſerted into the wings of the Noſe: That contracted, depreſſeth the wings; this doth introduce or bring them in, and ſo ſhuts the Noſtrills. And it may be the orbicular Muſcle of the upper Lip, drawing that Lip downward, doth withall conſtringe and ſhut the Noſtrills, helping a little the attractive action of the Noſe. Now becauſe when incenſed Choler gets into the Noſe, the Muſcles commonly call'd the Conſtringent are moſt active to bring wind to this Pepper-Wind-Mill, whereby it is put into a fuming motion,

they may be called *Muſculi magna Spirantes*, or *Magni Spiritus*, or *Fumantes*, or *Excandeſcentiæ*, the fuming Cholerique, or the Chafing Muſcles, or the Muſcles of precipate Anger, or Magnamity.

Memb. VIII.

Of the Muſcles active in the ſignifications of the Mind exhibited by the Cheekes.

FOr the advancement of the ſignificant motions of the Cheekes, there are two Muſcles ſubſervient to each of them, and theſe Muſcles are ſeldome moved, but in the ſame motion they draw the Lips into conſort of their ſignifications; the Muſcles being common to them and the Lips; for, theſe Muſcles are not appropriated as peculiar to the Cheeke, but becauſe they ſeeme more to ſerve the expreſſions of the Cheekes, than of the Lips, *Spigelius* thinkes it more fit, with that warning of their Community, to revoke them to the Service of the Cheekes, and ſo conſequently to bee the inſtruments of

thoſe

thoſe voluntary motions which appeare in them, which are as *Galen* obſerves performed without the motion of the lower Jaw or opening of the Mouth, the Cheeke and the skin to which they are annexed being onely moved, which motion is evident before Diſſection; the Region of their power being that inferior looſer part ſeated without the cloſed Jawes and is extended from the Chin almoſt unto the Eyes, and which by the breath recalled by the Lungs and reteined in the Lips ſhut, may bee blowne up. As for the Balls or Aples of the Cheekes, the ſeate of Shame, they have no Muſcles, but are drawn in conſort by the motion of the Neighbouring skin, not having any proper ſignifications appertainng to voluntary or locall motion; but although they have no Muſcles diſpoſed under them, yet is the skin looſe having under it the membrane *Periostium*, and becauſe its inferior part adheres to the Cheekes, and the Superior part is united with the Muſculous ſubſtance which is under the Forehead, it may be moved together with them. *Galen* allowes us, if we will,

to reckon this a fift Species of skin; but according to its proper Species, it differs nothing from the skin of the whole Body: yet becauſe it hath this peculiar, to be conteined and hemmed in by two skins, and thoſe movable, united and cohering with them, by that reaſon comes to be endued with a voluntary motion; and, therein, now differs from the skin of the whole Animall. So that being not moued *per ſe*, but *per accidens*, having no ſenſible motion, as not fitted for ſuch an uſe; the ſignification of their motions do's conſequently depend, as Suffragans, upon the motions of the other parts.

Diſſect. XXIV.

Scorne and *Detraction* make a man ſometimes to diſtort his Cheekes, and draw one ſide of his mouth down unto the other ſide, in imitation of the *Cynique Spaſme*, So that the Cheekes keepe not their owne ſituation and figure, but one followes the other; for, when we withdraw our mouth obliquely to the left ſide, the

Muſcles

Muſcles are ſo drawne together, there is a neceſſity the Muſcle of the other Cheeke ſhould be drawn to follow the Retraction, which thereupon becomes more extended and longer than the other; for thoſe that are *Muſculi congemeres*, that is, which conſpire to one and the ſelfe-ſame actuall expreſſion, which are uſually one on the Right ſide and another on the Left, as often as theſe Muſcles in the oppoſite parts are paires in number, magnitude, and ſtrength, the contraction of one makes a relaxation of the other, that part which is contracted drawing the other, to wit the whole Cheeke aſide unto it, ſo that it alwayes happens that the relaxed part is carried to the contrary part, for that is drawn by the Muſcle that cauſeth the Action, which contraction of the perverſe Cheeke happens by reaſon of the ſhortneſſe of its Muſcle, for, every motion that proceedes from the will ſeemes to be done by the attraction of the Muſcles to thoſe parts whence they ariſe, neither could the attraction of the other Cheeke be done unleſſe the oppoſite Muſcle were drawn back to

its

its originall, whence it appeares that the Depraved figure of the Mouth or Symptome of the function of the voluntary mover hurt, called by Phyſicians the *Cynique Spaſme*, which this action ſeemes to counterfeit, by this account differs onely from the Naturall, that it is done beſides our will, the Convulſion driving the Nerves and Muſcles to the ſame affect, to which they are led by the Animall Faculty when they keepe their naturall habit; the Muſcles are contracted into their proper heades, and with them they rivell that part into which they are inſerted, which indeede is common to the naturall and prætternaturall Plaiſe-mouth or Dog-Spaſme. This ridiculous action proceeding from a Detracting Diſpoſition of the mind is performed by the ſquare Muſcle of the Cheeke by *Spigelius* called *Detrahens Quadratus*, the firſt that ſuffers convulſion in thoſe that are falling into the *Cynique Spaſme*; the varying conduct of the fibres of which Muſcle ſome being ſtraight, ſome oblique, and ſome tranſverſe, are to be well conſidered of by Chirurgions in their inciſions in theſe

theſe parts, which ſome not knowing, by an over free cutting of the tranſverſe fibres overthwart, have cauſed both Cheekes to run as plucked to one ſide. This is a thin Muſcle although broad and large lying hid next under the skin of the Neck, and encompaſſing the whole upper Jaw in the Face, draweth its origen from the regions of the ſnigs of the Vertebres of the Neck, the externall part of the Neck, the *Scapula*, *clavicula*, and the Breaſt Bone, aſcends by degrees with oblique fibres to the Face, and is implanted into that part of the Chin where the upper Lip is joyned unto the lower. This Muſcle, which covers the Face, and out of which the Muſcles of the Noſtrills Eye-browes and Lips are made, being contracted unto it ſelfe by aid of thoſe oblique and tranſverſe fibres it hath, the Cheeke we command, is drawne awry, the Noſe, Eye-browes and Lips following the obliquity of that motion, thereby making this Ironie of geſture moſt compleat, for, the Cheeke, the Seate of laughter leading, the Noſe with dry mockery or Deriſon followes, the

Lips

Lips obſequious by a ſilent Detraction, manifeſt their agreement to the motion of the Noſe, and though they two are in the midle, yet both agree to aſſiſt this action on the ſide ſtage of Deriſion, while the Cenſorious Eye-browes overlooking, by a motion of aſſent and concurrence applaude the Irony. From the ſignification of Detraction which this Scheme or figure of motion aptly expreſſeth, this Muſcle may retaine the name of *Muſculus Detrahens*, and be called the Detracter, Detractions by *Solomon* being aptly called *Detrahentia labra*, Detracting lips, alluding for all wee know to this action of the Cheekes, the Lips alwayes moving, when this ſquare Muſcle moves, which is common to them and the Cheekes.

Diſſect. XXV.

Anger, *Swelling indignation*, *Pride*, *Diſdaine*, *Arrogancy*, and *Ambitious love of praiſe*, puff up the Cheekes of ſelfe-conceited men, and make them looke big upon others. *Spigelius* thinks this motion is not performed by the help of any Muſcle but onely happens by the relaxation of the fibres of the Muſcle

Muſcle *Buccinator* while the breath is rettined in the hollow of the Mouth the lips being ſhut this Muſcle is Diſtended which makes the greateſt part of the Checke. But the Muſcle *Buccinator* being ſo called from the ſimilitude at leaſt of this affectation of the mind, comprehending all that part which is blown up when we ſound a Trumpet is commonly aſſign'd to this action and conſequently to the ſignification of this affectation of the mind. A Muſcle thin and membranous, lying under the *Square Detracter*, interwoven with divers fibres, from whence its divers actions proceede, and is ſcarce any thing elſe but a fleſhy implexure of fibres; this from the upper part of the Gums of the ſuperior Jaw is terminated in the top of the Gums of the lower-Jaw in the manner of a circle, which ſince it emulates a circle, and in a circle what ever part is taken the ſame is both the beginning middle and the end, it matters not whether you ſay it proceedes from the upper Gums into the lower or from the lower into the upper. This Muſcle according to our Deſigne of referring

all names to the Affections of the Mind might be called *Muſculus Ambitioſus*, the *Ambitious* or *ſelfe-conceited Muſcle*; and there is a ſignature of the conceited Capacity of the Mind, in the moſt capacious figure of this Muſcle, which is a Circle, which thus put in motion, by way of oſtentation ſeemes to infer to others, how far they can enlarge and extend the Sphere of their ability, even to comprehend all within the compaſſe of their perfection, and perſonall worth; which leaſt any man ſhould not ſufficiently underſtand, they are ſo puffed in mind, that they will ſtraine themſelves ſo far, as to ſound the Trumpet of their own Praiſe, by making an unhandſome uſe of the Muſcle *Buccinator*. Nor is it altogether unſignificant that this ſelfe-conceited and praiſe-ſeeking Muſcle lies underneath the Detracter; for they that ambitiouſly arrogate to themſelves the merits of applauſe are very apt to Detract from others; and indeed, Ambition and ſelfe-conceited Pride is but Detraction under a Viſard. But if the puffe of Anger ſwell this Orbicular Muſcle, he that puffes and chafes after

this

this manner, ſeemes to be his own Trumpeter, and to ſound defiance to thoſe againſt whom he preſents himſelfe with Cheekes ſo inflate.

Diſſect. XXVI.

Deſpaire makes the Cheeks to fall or ſinke; they who think the former affectation of the Mind to be performed by the help of no Muſcle appoſite to that action, conceive this adduction or contraction of the Cheekes is performed by the Muſcle *Buccinator*, which with them is *Contrabens alter*, as being deſigned by Nature unto it; and it may well be by its Contraction, or the Contraction of its fibres, a motion quite oppoſite to that of Confidence & ſelfe-conceit, being a contrary affection or motion of the Mind. But this action is not very remarkable unleſſe in proud and confident ſelf-conceited men when they are humbled by a counter-buffe of acquiſition, and the bladder of their pride is thereby pricked, that makes them look like the baffled Sons of Deſpaire.

Diſſect.

Diſſect. XXVII.

Cheereſulneſſe a *pleaſant* and *ſmiling Alacrity* cauſe in many a Dimple in ſome part of the Cheeke, which Anatomiſts call the Navell of *Venus*. This is cauſed by the moving of the ſame Muſcle *Buccinator*, which after the manner of a Sphyncter encompaſſeth the Cheekes, which when it is contracted and drawn in, in ſome part of it make that Pit or Dimple which ſo gracefully appeares in the Cheekes of ſome men.

Memb. IX.

Of the Muſcles that ſerve the Mind in the motions of the Lips and Mouth.

FOr the Declaring the Motions and Affections of the Mind, the Lips the cover of the Mouth, were to be moved with a voluntary motion; wherefore they have obteined Muſcles, without which no voluntary motion can be performed; for the expediting therefore the ſignificant motions of the Lips (beſides the Muſcles common to them, and the Cheekes) there are foure paire of Muſcles aſſigned unto them; which is the moſt received opinion, although *Fallopius* would adde a new paire; and *Riolanus* ſaies we may

number eleven proper Muſcles, beſides thoſe two common to the Lips and Cheekes. But their Muſcles are but foure, becauſe there are but foure principall motions: by which foure, eight motions are performed. *Columbus* ſaies, that by mediation of thoſe foure Labiall Muſcles, we performe twelve motions at the leaſt, (for to every motion there are not peculiar Muſcles dedicated, but the ſame Muſcles that lift them up draw them alſo awry, to wit, when one of the Attollents work alone, whereas when they both act they cauſe a Right motion.) But they all upon occaſion receive action and employment from the command of the Will. Theſe Muſcles of the Lips are ſo mingled with the skin, that the fibres do interſect themſelves acroſſe, from whence the motions of the Lips are very divers, for, becauſe the fibres are diverſly mingled and enfolded together, being of two kinds, the Externall, and Interhall, they do not only bring forth *Divers*, but *Contrary* motions. But the *Commiſſion* of the Lips with the skin is moſt admirable; for here you cannot

ſay

ſay they are laid under, and that they do adhere and cleave to above, as in the Front and other parts of both the Jaws, ſeeing that in theſe, we can diſtinguiſh and determinate in perſpicuous limits, where the Muſcle truly ends, and when the skin ariſeth. But in the Lips the permiſtion is ſo throughout, that both are aboliſhed and confuſed in one another, as you cannot ſay this is a *Muſcle*, and this skin, which is common and conflate of both, neither in the whole, or if you ſhould divide them in parts, but you may rightly call them either *cutaceous Muſcles*, or a *Muſculous skin*. *Galen* where he reckons the ſeverall kinds of skins in the Body, counts this the fourth kind, in which the Muſcles are loſt, (and as we may ſo ſay) confounded together with it; for, the foure beginnings of thoſe Muſcles which come to the Lips are perſpicuous indeed, and manifeſt before they are mingled with the skin; but afterwards are to be found no more, and cannot be ſeparated from its ſubſtance; inſomuch as he holds it worth our ſerious conſideration, whether Anatomiſts

ſpeake

ſpeak truly or properly in ſaying, both the Lips are moved by Muſcles obliquely inſerted into them: or whether we might rather ſay that the Muſcles of both are *ex toto cuticulari*, but aſſiſted by the fibrous Muſcles; which Fungous and very moveable ſubſtance, and unuſuall compoſition, deſervedly accrewd unto the Lips, by reaſon of their peculiar action, for unleſſe the ſubſtance had been ordered after this manner, thoſe Actions, the Signes of the Affections of the Mind, could not poſſibly have been done as now they are; or ſo ſignificantly expreſſed: neither could the Lips have had ſuch variety of important motions. But hereby ſo ſingular and renowned is the choice ſubſtance of the Lips, and the various movings for which they were ordained, that they are ſoon ready to any kind of uſe and action, that the Will can call for or require.

Diſſect. XXVIII.

THey who *Contend* and *Diſpute* with ſome *beate of Anger* when they heare their Adverſary, and go about to anſwer them, are obſerved to open the Mouth, and lift up their upper Lip.

This

This motion is performed by the firſt paire of proper Muſcles of the Lips, commonly called *Attollens Labrum ſuperius*, The Attollent of the upper Lip, which ariſeth out of the firſt bone of the upper Jaw where the Ball of the Cheeke is, and is inſerted into the ſide of the upper Lip neare the Wings of the Noſtrills; when this whole Paire works together, it lifts the Lip ſtraight upwards, from whence this Muſcle might be called *Muſculus logiſticus*, the Logiſtique or Contentious Muſcle, or the wrangling Diſputant. But although this Muſcle be chiefe operator in this motion, yet we muſt note with *Galen*, that the whole ſubſtance of the Lip doth much advance the Action. Note alſo that when this motion is done ſtraight upward with the whole Lip then the whole Paire work together. But when one ſide of the Lip is obliquely lifted up, then one of them is only employed.

Diſſect. XXIX.

ANger and *Diſcontent* of mind cauſe one to pout or put out the Lower-Lip, who are then ſaid to han

the Gib, an action moſt commonly ſeene in children when they are angred. Which motion is performed by the Muſcle of the Lower-Lip, commonly called *Deprimens*, proceeding from that lowe and interior Seate of the Lower-law where there is a certaine aſperity, protuberating as it were to the ſides of the Chin, and by and by obliquely aſcending, is inſerted into the midſt of the Lip; which Muſcle from this action might be properly called *Muſculus triſtitiæ* the ſad or diſcontented Muſcle.

Diſſect. XXX.

THey who would *Mock*, *Deride* and *Contemne* others, uſe to ſhoote out and bow back the Lower-Lip; this action as I take it, is performed by the diſcontented Muſcle when the exterall fibres of the lower-Lip are ſtrained and ſtretched out, not a little aſſiſted by the fungous ſubſtance of the Lips which is eaſily filled, and being repleniſhed protuberates: and becauſe this outward deflection of the lower-Lip, which *Galen* reckons among the ſtraight motions of the Lip, is performed chiefely by the operation of the externall fibres

of

of the Lip, they Deſerve to be called *Fibres Sarcaſmi*, the mocking or contumelious fibres.

Diſſect. XXXI.

THey who *Scorne* and *Deride* others are many times ſeene to Diſtort or wreſt their Mouth by drawing it to one ſide, Like unto the Mouth of a Plaiſe, or in reſemblance of the *Cynique Spaſm*. This ironicall and voluntary Torture of the mouth is cauſed by the operation of the Second paire of the Muſcles of the Lips commonly call'd *Abducens*, or *ad latera trahens*, which ariſing from the Cavity under the balls of the Cheeks is inſerted into that place where the Lips meete together and are conjoyned. This motion being aſſiſted by the Common Muſcle of the Cheekes and Lips commonly call'd the Square or *Detrahent* Muſcle of the Cheekes, by us call'd the Muſcle of Detraction, whoſe oblique fibres doe not a little Contribute to the ſignification of the mind exhibited by this oblique motion of the Lips. From which operation the Muſcles *Abducent* have in this ſignification of the mind they might be

properly

properly called *Sannones* the Scoffers or the Muſcles of Scorne and Deriſion. Note that this ſignification of the mind may be exhibited by the mouth drawn to both ſides or either ſide according as the whole paire or one alone doth act.

Diſſect. XXXVI.

Effeminate and *Amatorious affections* in the mind make Harlots perpetually to play with their Lips, and ſweetly to bite them and ſucke them in; a motion obſerved to be cuſtomarily uſed by ſuch Creatures, performed by the tenſion of the internall fibres of the Muſcles of the Lips, whereby the Lips are drawn to give way inward and to fold themſelves in this Right motion as they (all it) of the Lips being much furthered by their ſungous Subſtance which is fully Emptied & afterwards contracted. You may call theſe internall the amatous fibres of the Muſcles of the Lips.

Diſſect. XXXVII.

WE ſhall ſee in unhappy Boyes that when they would mock and deride one another, they thruſt out their Lips after the manner of a Hens rumpe.

rumpe, which we uſually call to make a Mow, which ridiculous geſture is performed by the conſtringent Muſcles, which are compounded of all the ten Muſcles of the Lips, and are that Muſculous extremities of the mouth, and that fungous and vermilion Subſtance which wee ſee, and with orbicular fibres encompaſſeth the outer mouth, and ſhuts it in like a Sphincter, which Muſcle is very conſpicuous in them that have great lips. This mock Spinctter when by its hayry ſtrings it workes this motion, making the mouth a port Eſquiline of Deriſion, ſtraightens and thruſts out the mouth forward, and is (as *Galen* and *Avic*compare it) like the ſhutting of Purſe with ſtrings; for in this attraction or corrugation, the Lips are ſo much encreated in thickneſſe, as the is of their length taken from them b that action: as if you ſhould, putti two fingers upon them, on each ſid one, and lightly compreſſing, contr them, you ſhall advance them in ſuch an altitude & thicknes, as you ta away Latitude by conſtringing the

on each side. By this meanes the tension of the Muscles while they are diversly distracted at one time, deduceth the extreames to a medium, the fungous substance of the Lips not a little helping them, for such a substance is easily emptyed and repleniſhed; emptyed is submitted, and repleniſhed, raiſ'd into a tumor. The Profeſſors of Diſſection before *Galens* time, made no mention at all of the *priorum* or *anterior* motion of the Lips, neither was he ſatisfied how this was done, but referres it to his Tract of obſcure and doubtfull motions whoſe manner of moving is not fully found out; which ingenious Tract, by the injury of time, (to the great Damage of Anatomy,) is loſt, for that which we have under that Title *Spurius*, as *Hofman* thinkes, whoſe judgement herein admitted would ſomewhat weaken the Authority of the Quotations of that Tractat. There alſo, as I conceive, a concurrence of the round membranous Muſcle *Buccinatorius*, which is inſeparably cruſted about with the Coate of the mouth, do that ſignature and cooperation of that

Muscle seeme to exhibit a desire to proclame as with a trumpet the Contempt and Scorne that is then exhibited.

Dissect. XXXIIII.

IN *Salutation*, *Valediction*, *Reconciliation* or *renewing of Love*, *Congratulation*, *Approbation*, *Adulation*, *Subjection*, *Confederation*, but more especially and naturally *in token of Love*, we use to kisse, which is done by drawing together the Lips into themselves, and a little putting forth the parts that lye loosely scattered about the Mouth, this being the usuall Prologue to a Kisse, which cannot be decently done unlesse we a little contract our Mouth; which significations of our Will are thus exhibited by the moving of the Muscle commonly called the Constringent Paire of the Lips, or *Corrugant* from puckering the mouth; which is done after this manner, the upper Lip is not only drawn together, but withall pulled downward, and the lower Lip lifted up, whereby the Lips are Collected and reduced into themselves; this Muscle [illegible] from this employment, to be called *Osculatorium*, because it contri-

the Lips when we fasten a Kisse upon another: which name implies only the manner of the outward Action and not any inward Affection of the Mind exhibited thereby, the Latines having no word to signifie both, which the Greekes have, whith whom φιλεῖν is both to Love and to Kisse. This Muscle from its office might be called the loveing paire, *Par Dilectionis*, or the Sphincter of Salutation. Note that this Muscle is assisted in this signification by the Muscle *Buccinator*, which is common to the Lips with the Cheeke, which Muscle we have named the Muscle of the Navell of *Venus*.

Dissect. XXXV.

THey who *mock*, *wonder* and *admire* are wont to *Gape upon one with their mouth*. *Stupidity*, *Folly*, *Idle expectation*, and *Greedy attention* cause the same Action of the Mouth. The significations of the Mind exhibited by this Gesture are performed by the Action of the paire of Muscles of the lower Jaw, commonly called, *Graphoides & Deprimens Biventre*; which arising from the *Appendix Styloides*, when it comes

to the Anterior part which is under the Chin, there it is inſerted into its Internall ſeat, which therefore is a little exaſperated; this paire when they both worke together by pulling down the Jaw, open the mouth into a moderate figure, wherein the Temporall and maxilliary Muſcles are at reſt. The ſmallneſſe of this paire of Muſcles, as it ſhewes that the motion is eaſily done, the Jaw with its own weight tending downwards, needing no ſtrong retracter, but as a weighty thing is led downwards with very little ado; ſo by ſignature of the Inſtrument inſinuates how prone by Nature the Mind of man is to theſe kind of ſignifications, implying withall, (that whereas the Mouth is the Gate of the Stomack, and now opened as the Gin of reproach by a double-bellied Muſcle, ariſing from ſuch an Appendix as reſembles a Needle or Pin of a Table-Book, and inſerted into a part which hath therefore a ſignature of Exaſperation,) an extraordinary Appetite, even canine, with a ſilent ſtile to engrave a Scoffe in the Face of thoſe againſt whom exaſperated we ex-

exhibit this *Hieroglyphique* of open Contempt, wherein there needs no words, the abuſed naturally too well knowing mens meaning by their Gaping. Nor is the Caution and Proviſo of Nature in the ordering of this Muſcle to be paſſed over in ſilence; for in the midſt between the Bellies of this Muſcle there is a Tendon which a cerraine Membrane growing to the adjacent parts doth involve, reſembling a Pully, contrived to prevent an exception againſt the Generall Rule of Muſcular motion: for, ſince theſe Muſcles (as they ſhould have done according to the Species of their intended Action) derive not their originall from the lower parts of the Neck, but ariſe rather from the upper parts, they are reflected about the lower parts of the Jaw, as it were, at a Pully, not without an allegoricall ſignature of the uſuall effect of Mockery and ſcornfull Strife, of which a Pully is the *Hieroglyphique*, for as that turnes as it were returning upon it ſelfe, ſo ſuch kind of Strife begets Strife, that it ſeemes to be rowled upon it ſelfe. Neither is

this Retraction or Depreſſion of the Jaw performed without the aſſiſtance of the Square Muſcle of Detraction, which hath great coherence with the Chin, Contempt and Mockery being never without ſome kind of Detraction. ¶ There is alſo a naturall Reaſon for this Action of theſe Muſcles in greedy attention, becauſe the Mind is furthered in that matter by this Action, for out of the very fift paire the Auditory Nerve there are remarkable branches ſent to the Palate, the Bone *Hyoides*, and the *Larynx* in the mouth, wherefore from thence, that is by the mouth: ſounds may be conveyed to the Eares, even to the Tympanum; for diſtinction (therefore) we call them *Muſculos avidæ attentionis*, the Greedy Gapers, or Muſcles of the attentive bent of the Mind. You might call them as well *Muſculos otioſæ expectationis*, the Muſcles of idle expectation.

Diſſect. XXXVI.

IN ſome *tedious heavineſſe of Mind*, in the *Diſlike and wearineſſe of our abſent mind*, in the *wandrings*, and the *looſe and manifeſt ſecurity* thereof we of

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are drawn to *Yawne*, an extreme figure, as they call it, of the lower Jaw, wherein the Lips are moſt diſtant from one another, one protended upwards towards the Noſe, the other drawn down towards the Chin, and with *Galen*, is one of the two Right motions of the Lips which are altogether ſtraight. Theſe ſignifications of the Mind are performed by the ſame Muſcles as the former motion is, which might likewiſe hence receive the name of *muſculi oſcitantes*, or *oſcedinis*, the yawning Double-bellied Muſcles, but more properly, in reference unto the affection of the Mind, we might call them *Muſculos Hallucinantes, vel fluxæ Securitatis*, the Nauſeous Muſcles, or the Muſcles of wandring Security. This Oſcitation (how ever ſome ſpeak) is from the Animal Faculty, and therefore is performed by Muſcles, and is done by the Muſcles of the Face, as it were, dilated by deliberation, that the crude vapour may go out, as Pandiculation is a Deliberate Action of the other Muſcles of the Body: Neither need it to trouble any one, ſeeing a thing

that is done out of Deliberation, and which ſeemes to proceed from Prudence, to be done by Infants, and of us without conſidering of it; for, Nature (as *Hippocrates* ſaies) is Learned without a Teacher. Theſe are done by a certaine *Inſtinct*, but not ſuch as moſt men take to be *Naturall*, for we underſtand this Action to be *voluntarily* done, becauſe when we pleaſe we can begin it and reſtraine it; And when we make others yawn, it is not done ſo much by *Sympathy* as by conſent of parts, & conſpiration to Action; for, our voluntary motion is done ſomtimes by *Deliberation*, and ſometimes by *Imagination*; *Imagination* alwaies prevents and goes before *Deliberation*, when therefore the Muſcles of the *Temples* and *Cheekes* conteine any vapour (by *Imagination*) when one yawnes others are moved with that moving, and ſo they move the Faculty, not ſo much to expel, as to be a deponent, & to lay down the windy burden with which the Muſcles were charged.

Diſſect. XXXVII.

They who by ſilence would expreſſe the reverence and regard

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they have of thoſe who are in preſence, uſe to cloſe their mouth and hold their Lips together; which is performed by the moving of the Temporall attollent Muſcle, which filling the whole cavity of the Bone of the Temples, has its beginnning from the bone of the Forehead *Synciput* Temples and *Cuniformis* is at laſt inſerted with a ſtrong Tendon into the proceſſe of the lower Jaw. When this Temporall paire work together, they bring the lower Jaw to the upper, and ſo cloſe the mouth which is held ſo ſtill in the poſture of ſilence by the *Tonique* action of the ſame Muſcles which for the moſt part is *Tonique*, unleſſe when we ſpeake or ſleepe open mouth'd, for when we ſleepe with our mouth cloſed, the *Tonique* action of theſe Muſcles is preſerved.

Diſſect. XXXVIII.

Anger, Indignation, Griefe, Diſpaire, Jealouſie, Wonder, Admiration, and *evill Cogitations*, Cauſe men many times to bite their Lips, an Action which they alſo uſe who meditate and threaten revenge: which affections

ſections of the mind are expreſſed in the Lips and Teeth by the operation of the internall fibres of the Lips, and the ſtrong Compreſſion of the Teeth occaſioned by the forceable working of the temporall Muſcles.

Diſſect. XXXIX.

Anger, Cruell virulency in thoſe that *Threaten Revenge, Envy* and *Virulent Mockery* and *Inſultation* make men ſometimes gnaſh and grind with their teeth, and to ſet them ſo firmely together that the Cheekes are drawn in o adver e partes. This action and virulent expreſſion of the Mind alſo is performed by the violent Compreſſion of the Teeth by the ſtrong force of the Temporall Muſcle.

Memb. X.

Diſſect. XL.

IN *Deriſion, Scoffing inſultation* and *contumelious Deſpight* men are ſeene ſometimes to lill out their tongue at thoſe they Scoff & deride. Concerning this ſignificant motion of the Tongue *Auerrhoes* is of opiſion that it is not done by the aid of the Muſcles, but by

a proper motion, and would prove thereby that the Nerve and not the Muscle is the first and necessary principle of motion. But *Columbus* and most Anatomists are of the contrary opinion. *Galen* indeed is very Sceptical about this motion and hath placed it among doubtfull and obscure motions which he was not well satisfied in: for sayes he, the Tongue doth not seeme when it is extended out in length to go uniformely out of the mouth, for it covers the lower Lip and descends somewhat to the Chin, and that is by reason of the Bridle which is beneath it before, we find not the cause by reason whereof the Tongue is prolix or prolonged untill it be visibly put out of the mouth. No motion obeyes the will but the motion of a Muscle and no Muscle conteined to the tongue distends it untill it bring it forth of the mouth, hence for good reason we fall to staggering when wee would know after what manner this action of the Tongue is done, and if any motion could bee found in the Body which is done by the will without any Muscle

there

there had no ambiguity fallen into this queſtion. Indeed there is a rarity and porosity in the Tongue as in the virile member, but that there ſhould bee ſuch virtue in it as we obſerve the appetite to inſtill into that Petulant part ſo that it moves with competent motion and thruſts it ſelfe out of the mouth, how this ſhould bee done that is to be conſidered. And yet the action in kiſſing, which ſome beaſtly Leachers uſe when their veines are inflate with luſt would enduce one to think that there were ſome analogy between the extenſion of theſe two unruly members. The difference betweene the erection of both parts is that the virile member is not onely encreaſed in length but in thickneſſe and compaſſe: but the Tongue onely in length being not increaſed in all the dimenſions of its body when it goes out of the mouth. And becauſe they who uſe this Action of the Tongue doe it before they can thinke or underſtand with what Muſcle or motion they ſhould produce it, it is agreeable & meete that the Muſcle whoſe luſt was impoſed upon it, for this reaſon ſhould

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neurr a Satyriaſis when it avoucheth luſt, and imagines by the aptitude of the thing unto it. So that the cauſe propinque of the Egreſſe of the Tongue out of the mouth and of *Priapiſme* is a thing of very ſubtile Speculation. It is no marveile that the Tongue voluntarily is moved onely by the Muſcle. But there is a virtue in it by which it doth indeed weigh what the Intellect doth deſire. So that it may move it ſelfe with motion for a competent Egreſſe out of the mouth, which doubt in effect inſinuates the Tongue it ſelfe to be a Muſcle, although he ſpeakes not plainely out. But according to the moſt received opinion this ſignificant action of the Tongue is attributed to the operation of the paire of Muſcles called *Genioglofſum* or *Extrahens Linguam*, which ariſing from the aſperitity which is in the midle of the lower Mandible, but is in the internall Face, is inſerted neere the rocte of the Tongue; this paire contracted, puteforth the Tongue beyond the Teeth and Lips, which paire in reſpect of this ironicall action performed by it, according to our

Liller,

manner ſhall be called *Cynogloſſum*, the Liller, Dog-muſcle, or the Blaring *Cyniquæ*; or the Muſcle of Contumelious Deſpight. And there is ſomething remarkable in the principle of this motion deſerving to be remembred, which *Fernelius* and *Bauhinus* have obſerved, according to whom, it is the onely Muſcle of the Body that is the opifex of two contrary motions, and hath nō fellow; for, every one hath but his ſimple action whereby it is reduced to its Head, and the Originall of the Nerve: But the greateſt part of the fibres of theſe Muſcles is carryed to the roote of the Tongue, but the ſmalleſt part of them towards the Tip, ſo that the parts of the ſame Muſcle produce contrary actions, for, with the greateſt part of the fibres drawing to their originall, the Tongue is put forth without the Teeth and Lips: but the leſſer part of them working, they recall it in, to which revocation ſome aſſigne the next paire *Hypſiogloſſi* which was appointed by nature to withdraw the Tongue ſtraight back; otherwiſe as *Arantius* well obſerves it would follow,

that

that the same Muscle would be both endued with a double action; and together at the same time both act and suffer, which is both contrary to Reason, and the placits of *Galen*. And it falls not within the compasse of my understanding how this out-drawer of the Tongue should performe that assigned office, for it seemes to mee by its Originall to be onely qualified with a power to draw the Tongue to the Chin, and therefore I am gravel'd with *Galen* about the manner of this motion, yet am withall inclinable to the judgement of *Vesalius*, a serious and an honest man, who sayes, that because no Nerve is inserted outwardly in the Tip of the Tongue, which should draw or thrust it out, it is more probable to attribute this ironicall eduction of the Tongue [to that Muscle,] then with some to confesse, that there are certaine voluntary motions in us, whereof no Muscle or Nerve is the author.

Dissect. XLI.

Of the Muscles serving to expresse all the vocall intentions and affections of the Mind exhibited by the motions of the Tongue and

Lips

Lips, and whether for thoſe purpoſes the Lips and Tongue were made Muſcles.

BY *Speech* framed by the motion of the Tongue and Lips we have another way to expreſſe all the motions of the mind; ſpeech being a free and voluntary motion, which it appeares to be in that it may be made or reſtrained at pleaſure, it muſt therefore be performed by Muſcles, and they that carry the greateſt ſtroke in framing the vocall affections of the mind, being the Muſcles of the Tongue, and even the Lips whoſe Muſcles ſerve to order ſpeech have needs of its helpe. And therefore the Tongue in reſpect of this Office it performes to the Affections ſtood in need of many Muſcles, whoſe proper Muſcles, according to ſome are ſix, according to ſome nine, ſome ten, or five conjugations, ſome count them eleven. But not content with theſe, ſome reckon the ſubſtance of the Tongue among the Muſcles, among whom is *Stephanus*, yet *Riolanus* ſayes that although the Tongue may ſeem to be a Muſcle becauſe of its wrefted, obvolutions and implications like an Eel

o

or Lampery, yet it is not, and *Bartholinus* is of the same mind, because it hath no fibres neither doth move any other part but is moved by its Muscles; others add this reason; for otherwise the motion would bee made towards the end, and the Taile of the Muscle would be moveable and the Head immoveable, but that reason is false as *Bartholinus* proves, for the principle or begining of the Tongue is neere the Larynx, and as it were arising out of the bone *Hyoides*, it seemes not to bee Consonant to reason, that the Body of the Tongue should be a Muscle and that assome would have it a double one, for although it have such an Eele-like solubility, yet it were strange to the condition of all other Muscles, for first no Muscle is framed for it selfe, but for another part which is immoveable of it selfe, that so it might be moved by the Muscle. Hence to things that are moveable of themselves there was never any Muscle inserted, and therefore neither in the Braine, nor in the Heart, nor in the Arteries you shall find any Muscle, because these by an imbred

virtue

virtue are moved by themſelves; i
therefore the Tongue were a Muſcle i
would follow that it was made for it ſel
ſince it is inſerted into no immoveable
Body. Secondly, no Muſcle moveth i
ſelfe, unleſſe by accident, to wit whe
moving another to whoſe motiõ it is ap
pointed it is moved it ſelf, but the tongu
moves it ſelf not for another, wherfore i
is no Muſcle. Thirdly, every Muſcle aſ
by fibres, but nature has denyed fibre
to the Tongue. Fourthly, all Muſcle
are inveſted with a ſimple denſe an
thin Membrane, whereas the tongue i
covered with a thick hard porous an
rough skin. Fifthly, it is abſurd to ſa
a Muſcle moves a Muſcle, and that on
Muſcle is inſerted into another, whenc
if you call the Tongue a Muſcle, i
would follow that a Muſcle moves
Muſcle, for many Muſcles are attribute
unto the Tongue. Sixtly, if the Tongu
is a Muſcle and can performe ſo man
motions by it ſelfe, it would ſhew a
errour in Nature to have given it othe
Muſcles, for, *Fruſtra fit per plura quo
fieri poteſt per pauciora*, Since therefo
Nature hath not in vaine granted Muſ
cle

lesunto the Tongue, it will follow al-
o that the Tongue can be no Muscle.
There are not wanting some who sup-
ose they have excluded the Tongue
om the order of Muscles by these fol-
owing reasons; every Muscle drawes
s end towards its begining, which hap-
ens contrary in the tongue, for that
raws its Beginning towards its end But
is Reason is false as *Bartholinus* proves,
or the Principle or Beginning of the
ongue is neare the *Larynx*, and as
were arising out of the Bone *Hyoides*:
gaine, the Begining of a Muscle is
mmoveable, but they have a moveable
nd, but it is contrary in the Tongue,
hose end is rather immoveable than
s beginning. Therefore it is manifest
hat the Tongue cannot be numbred
mong Muscles. But this Reason as the
ther, is rejected as contrary to the
ular faith of Anatomie grounded up-
sight of the thing done; Therefore
ere is either somewhat that is moved
luntarily befides a Muscle, or all the
tions of the Tongue are to be attri-
ted to its Muscles. *Casserius* freely de-
ers his opinion in this matter. It

can-

cannot be but the Tongue should be
endued with a proper motion, and that
likewise voluntary; for, it is moved
after so many manner of waies, and agi-
tated unto so many parts, that it
were ridiculous to affirme all its moti-
ons to be performed by Muscles, yet
notwithstanding he will not therefore
call the Tongue a Muscle, but Mus-
culous, as partaking somewhat of the
Nature of a Muscle, existing as a mean
between a Glandulous and Musculous
Flesh. But *Fabricius ab Aquapendente*
most illustrious and acurate Anato-
mist, and the *Corypheus* of all the Tribe
of Dissectors, who hath subtilely Ana-
tomized all the Organs of Speech,
seemes to me to shew very good Reason
why the Tongue and Lips both should
be Muscles, that is for the Dexterity of
Speech, and the more ready expressing
the Affections of the Mind; for,
Speech be made by motion, and signi-
fie the Affections of the Mind, which
are motions without all question, the
moving of the Instruments must be al-
swerable to the movings of the Mind
but, since nothing is swifter than the

Mind

lind, deservedly therefore the movings
f the Tongue and Lips are very swift,
those which are to follow the moti-
ns of the Mind: It is fit therefore (as
ature would have it) that such mo-
ons should not be performed by the
uscles of the Tongue and Lip, but on-
from their Body as they are Muscles
themselves. The Tongue and Lips
e Muscles, as they have Muscles, they
e moved of another, and therefore
ower: but as they are Muscles they
ove of themselves, and that most
wifely ruled and driven, and for this
ause the Lips and Tongue were made
uscles, the Tongue and the Lips in
locution are moved of themselves, in
ther Actions not only of themselves
t by another, that is, by the Muscles,
d that for celerity and expedition;
, since Nature, with that which in
oving requires no great strength, re-
ires also the quickness of motion,
d makes the parts to be moved of
emselves by mingling the Motory
ower with the Part to be moved as in
e Tongue and Lips, which since
y were not to agitate a Bone, but

most

most light Aire, and to performe mo
quick motions in speaking, for goo
cause we judge Speech to be done with
out the Ministry of the Muscles, only b
the Body of the Lips and Tongu
which if it should not be so done, th
Affections of the Mind would be f
slower in their Delivery. So that th
Tongue is not the chiefe Instrument
Speech in regard of its Similar sub
stance, such as is not in the Body, f
in motive Actions we must not look
for a similar part to be the next cau
of motion, because in that it is a com
pounded Action it requires a compou
ded part which is the cause of an Actio
But only as it is movable, & it is movab
in as much as it hath received the Facu
ty of moving, & is a Muscle. Deserved
therefore according to our Modell
Denomination may the Tongue a
Lips be called *Musculi Rationationis*
orationis the Muscles of Discourse
Orall Reason.

Creatori, Capiti nostro, in Quo movemu
Cephaledoulia, in Excelsis.

FINIS.

Ad eminentissimi acuminis, scientificum utrinsque Physiognomiæ Protomystem.

GRata *Manus*, *Facies* nunc est gratissima no
Quæ docta vultus mobilitate placet (bis:
ondicta *Myotomus* nobis mysteria pandis:
Organa & aspectus mira patere facis.
lineas. *Mures* talparum more moventes:
Musculus os tenerum flectit ad omne *Pathos*
ternas *vultus* Rector moderaris habenas:
Affectus, Fons est *Frons*, & Origo *Capus*.
Oculos, sic ipse *Manus*, sic *Ora* movebas:
At nunc in *Caulis* ingeniosus eris.
Ita vides. Pulcra est Concordia cordis & Oris
Dextram *Myologi*, *Pathologia* petit.
riqua & temnas quasi sesquipedalia verba:
Nomina quæ signant, dum *propiora* dabis.
tomia nova hæc, veterum quam nemo priori
tentare ausus, & hoc tempore nemo Novus.
Admirari prope res fuit una, at Amice
e non mirari est, res odiosa nimis.

To the daring Advancer of all Somaticall Science his Selected Friend, on his PATHOMYOTOMIA.

THou Grand Adventurer, wits Magellan
To whom our Microſme or Iſle of man
By thy all ſearching Pen's ſo through
There's now no part in us an unknown land; (ſcan
How thriving is thy Fleet in new Deſignes,
To bring home not the Minerall but the Mines?
This Pathologicall Anatomy
Deare Friend hath wound our admiration hig
A ſtrange Eſſay indeed, that dares to trace
All the rare Springs and Wards that move a fa
To make Anatomy by Muſcles wind
The ſwifteſt motions of the minged Mind
Natures high piece of Clockworke this You c
Reaſon the Spring winds up, the Muſc'es all

L

Like wheels move this or that way, swift or slow,
As the Affections Weight doth make them go.
All the Soules motion's seen, the Head and Face,
Discovering all, as through a Crisstall Case;
Here the Affections keep an open Marte,
By Patent seal'd by thy Cephalick Art.
This Itchnographie of thy Art do's smile,
A promise on us, of some stately pile.
And puts us in good hope abroad to see
That Masterpiece of Physiognomie,
Thy Magisteriall Quintessence of Bookes,
Or extract Scientificall of lookes.
Then that whereby as a Face-Prophet shewn,
Thou know'st the Affections 'are the Bodyes own,
Whence subtilely thou 'rt wont to ken & trace
The Criticall Disease-discovering Face,
That though the humors bedded are within,
Yet thou canst track their footsteps in the skin.
Strange secrecy of Art and mysticall,
To cast our Faces as an Urinall;
Nay, by a strangers Face well copyed out,
For to pronounce by Art He hath the Goute.
Such are thy common Aguries; we may
Sure trust thy skil, that doth such beames display.

The last Yeare stil'd you Deafe & Dumbe mans
Now Thy Design more deeper doth descend. (friend,
I see Thy knowledge and invention flowes
As far In man as Sense and Motion goes. (fit,
Then take the Chair, where maist Thou Doctorall
Command our health's, as Thou hast done our wits.
Lure down thy soaring Truths, salve every doubt,
And by convincing practice make them out (good
To Faith-bound Sceptiques, who count nothing
Till flat experience make it understood.
Now to the Art-forsaken Deafe dispence
Thy skill as Auriſt to restore their sense.
Were thou once known, Surdasters would come in
To court Thee for Thy Autocousticon.

Next as a Linguiſt teach the Dumb to breake,
Or pick the Padlock lets his Lips to speake.
Ransom each captivd tongue, weak speech improve,
And the impediments thereof remove.
Then as a Moriſt by this healing light,
Set all our Heads depraved motions right.
And may succesſe attend, while swelling Fame
Fills up thy Sailes with an All-heal'ing name.

Tho: Diconſon. *Med.*
Templ.

Judicium Φιλιάτρου *cujusdam de hoc opusculo; in quo sanctioris* Anatomiæ, *& planè novæ, Specimen Lectoribus exhibetur.*

QUI *Manuum* Loquelam, reconditioris Philosophiæ Mystes, oculis suis primus hausit; qui *Cheirologiam* (spissum & operosum opus) primus ἐπιχειρήσας, quatuor abhinc annis, publici juris fecit; is ipsus Autor, ultra cutem & corticem, oculorum scalpellum, usque adeo Latenti *Capitalium Musculorum* Texturæ pariter, & Indoli demersit, ut hodie pererudium aliud cogitationum suarum & audacis juxtà & felicis industriæ portentum (Κεφαλολογίας prodituræ rudimentum) prodiderit, Vulgaribus *Anatomicis* nostris, & Sciolorum Vappæ, nec visum usquam, nec auditum. Ac

proinde nullius hic noſter Manuductionem ſecutus, nullius exempli premens veſtigia, motuum ἀντιτυπίαν dilucidè nobis expedivit. Quin & ipſis Muſculis, *Affectuum* organis & eorundem Pantomimis, nomina concinnè aptavit; & indigitavit inſuper, *Mentem* quaſi Corporis Navarcham ad clavum ſedentem, moderari *Artuum* funes, & eoſdem huc & illuc pro arbitrio remittere & contrahere. Qui ijdem *Muſculi* dum *Animi* pathematis ſeſe attemperant, & inſerviunt, ejuſdem lineamenta depingunt, & quaſi aſpectui obvertunt; & exteriore modificatione ſuâ, palam illa faciunt, quæ interiore impulſu machinamur. Ut hic libellus omnibus *reconditioris Anatomiæ* ſtudioſis, & uſui futurus ſit, & voluptati.

Scripſit *I. H.*

C. W. M.

A Table ſhewing the chiefe Heads of the Sections of the Introduction to this Anatomicall Adminiſtration of the ſignificative Muſcles of the Affections of the Mind.

Sect. I.

OF the Honour and Dignity of Animall Motion.

Sect. II.

That a Muſcle is the proper and adequate Agent of the voluntary and patheticall motions of the Mind, outwardly expreſſed in the Body.

Sect. III.

Of the Nature and Conſtitution of a Muſcle.

Sect. IV.

That the Appetite or will is the firſt Efficient cauſe, but not the Chiefe cauſe of motion; the Spirit and Faculty being the more propinque and conjunct cauſe, and that beſides

the Commandement of the will, the endeavour and intention of the mind is neceſſary thereunto.

Sect. V.

That it is ſtrange but not ſo wonderfull, that Animall motion ſhould be performed on ſuch a ſuddain.

Sect. VI.

That in all outward Actions the Soule commandeth either manifeſtly or obſcurely, and that wee are not ſtirred up to any ſuch motion by nature or cuſtome.

A Table ſhewing the Heads of the Diſſections of the Anatomicall Eſſay, deſcribing the Muſcles of thoſe Affections which are more conſpicuouſly emphaticall in the Demonſtrative Actions of the Head and Face.

The Proem

The Prerogative of the Head in point of Arbitrary and Significant Motion.

Membr. I.

OF the Muſcles the inſtruments of voluntary motion, whereby the generall ſignifications of the Head are performed.

Diſſect.

Dissect. I. II. III. IV. V. VI. VII. VIII. IX.

The Anatomicall Administration of the Muscles of the Affections, whose operations conduce to the generall actions of the Head.

Membr. II.

Of the Muscles serving to the generall expressions, and most important motions of the Face or Countenance.

Dissect. X.

The Anatomicall Administration of those Muscles.

Membr. III.

Of the Muscles appertaining to the Forehead and the Browes or Eye-browes, and imployed by the Mind in the significant motions thereof.

Dissect. XI. and XII.

The Anatomicall Administration of those Muscles

Membr. IV.

Of the Muscles appointed to the Eyelids for the expediting certain significant motions of the Mind.

Dissect. XIII. XIIII.

The Anatomicall Administration of those Muscles.

Membr.

Membr. V.

Of the Muſcles which ſerve to expreſſe the ſignifications of the Mind exhibited by the motions of the Eye.

Diſſect. XV. XVI. XVII. XVIII. XIX. XX.

The Anatomicall Adminiſtration of thoſe Muſcles.

Membr. VI.

Of the Muſcles aſſigned the Eares (as it is likely) for certaine ſignifications of the Mind.

Diſſect. XXI.

The Anatomicall Adminiſtration of thoſe Muſcles.

Membr. VII.

Of the Muſcles that ſerve to the ſignifications of the Mind exhibited by the motion of the Noſe.

Diſſect. XXII. XXIII.

The Anatomicall Adminiſtration of thoſe Muſcles.

Membr. VIII.

Of the Muſcles active in the ſignifications of the Mind exhibited by the Cheekes

Diſſect. XXIV. XXV. XXVI. XXVII.

The Anatomicall Adminiſtration of thoſe Muſcles.

Mem

Membr. IX.

Of the Muſcles that ſerve the Mind in the motions of the Lips and Mouth.

Diſſect. XXVIII. XXIX. XXX. XXXI. XXXII. XXXIII. XXXIIII. XXXV. XXXVI. XXXVII. XXXVIII. XXXIX.

The Anatomicall Adminiſtration of theſe Muſcles.

Membr. X.

Diſſect. XL.

Of the Muſcles ſerving the Tongue, for ſome ſilent expreſſions of the Mind, with the Anatomical adminiſtration of thoſe Muſcles.

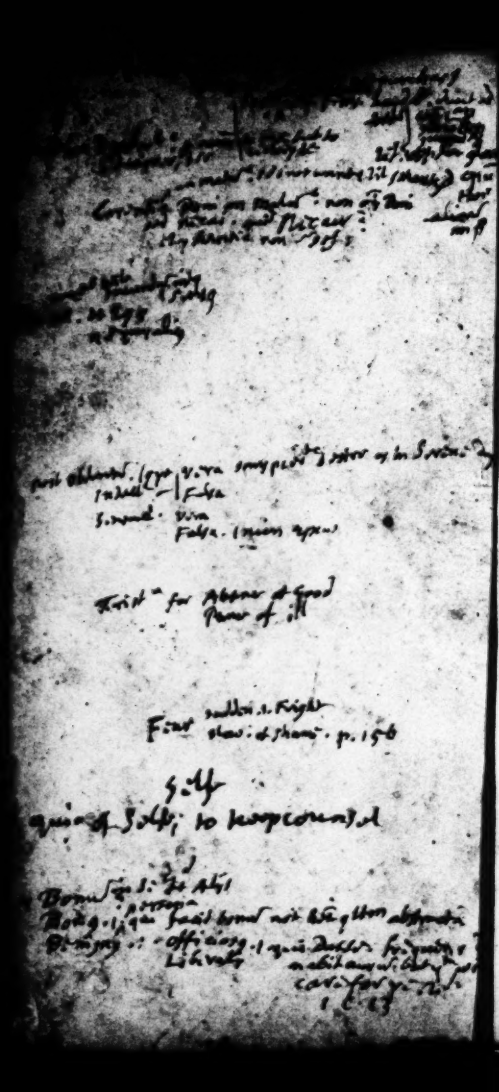
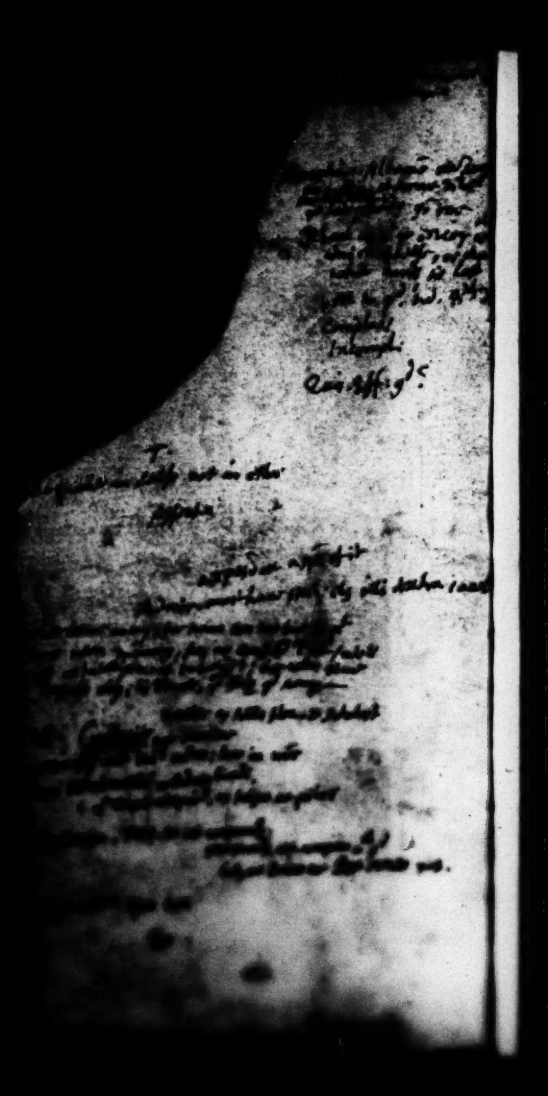
Diſſect. XLI.

Of the Muſcles ſerving to expreſſe all the ſo-call intentions and affections of the Mind exhibited by the motion of the Tongue and Lips, and that for thoſe purpoſes, the Lips and Tongue were made Muſcles.

AN

Errata.

FOl. 47. *line* 9. *read* motions. *fol* 107. *l.* 16. Larynx. *fol.* 120. *l.* 26. They. *fol.* 119. *l.* 18. *le* That. *fol.* 204. *l.* 14. *read* revell.

An Introduction to the Dissection of the Muscles of the Affections of the Mind, in apparent significations exhibited by the Head,

In six Sections comprizing the Philosophie and generall notions of voluntary motion.